MODELS OF UNITY AND DIVERSITY IN THE SYMPHONIES OF WILLIAM SCHUMAN: AN EXPLORATION OF GENERA THEORIES IN RELATION TO STYLISTIC CHANGE AND THE DYNAMICS OF FORM

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ABSTRACT

William Schuman's achievements as a composer are often seen as part of a conservative "Grand Tradition", based upon the models of the symphony, concerto and string quartet. But Schuman's conservatism is philosophical rather than stylistic. From an early style owing much to the influence of his teacher Roy Harris and the musical vocabulary (if not the aesthetic philosophy) of neoclassical Stravinsky, Schuman forges an independent path that sees his instinctive and highly personal approach to composition undergo a fascinating, and almost continuous evolution.

The essence of this evolution lies in a gradual shift away from static formal archetypes towards a greater fluidity manifest in single movement forms and an ever greater reliance upon development and harmonic conflict. This process is examined in the context of three of Schuman's finest works, the Third (1941), Sixth (1948), and Ninth Symphonies (1968). Drawing upon the writings of Arnold Schoenberg (notably the concepts of "developing variation" and the musical "Idea"), the process of "autogenetic development" is shown to mirror closely the ideals of "growth" and "unity within diversity" encountered in Schoenberg's writings. In addition, the pitch-class set genera theories of Allen Forte and Richard Parks are shown to provide effective models of harmonic materials, highlighting the tendency towards the integration of melody and harmony.

While this stylistic journey forms the central strand of the thesis, a second, no less important theme is the nature of the analytical tools themselves. The practical application of genera theories to 'real' musical objects is explored in depth, highlighting the contrasting methodologies of Forte and Parks, and the difficulties associated with the interpretation of genera profiles. In both cases the power of genera theory when applied to large-scale works such as these proves to be its ability to model shades of association far beyond simple networks of inclusion.

For Polly

PREFACE

Musical examples, figures and tables

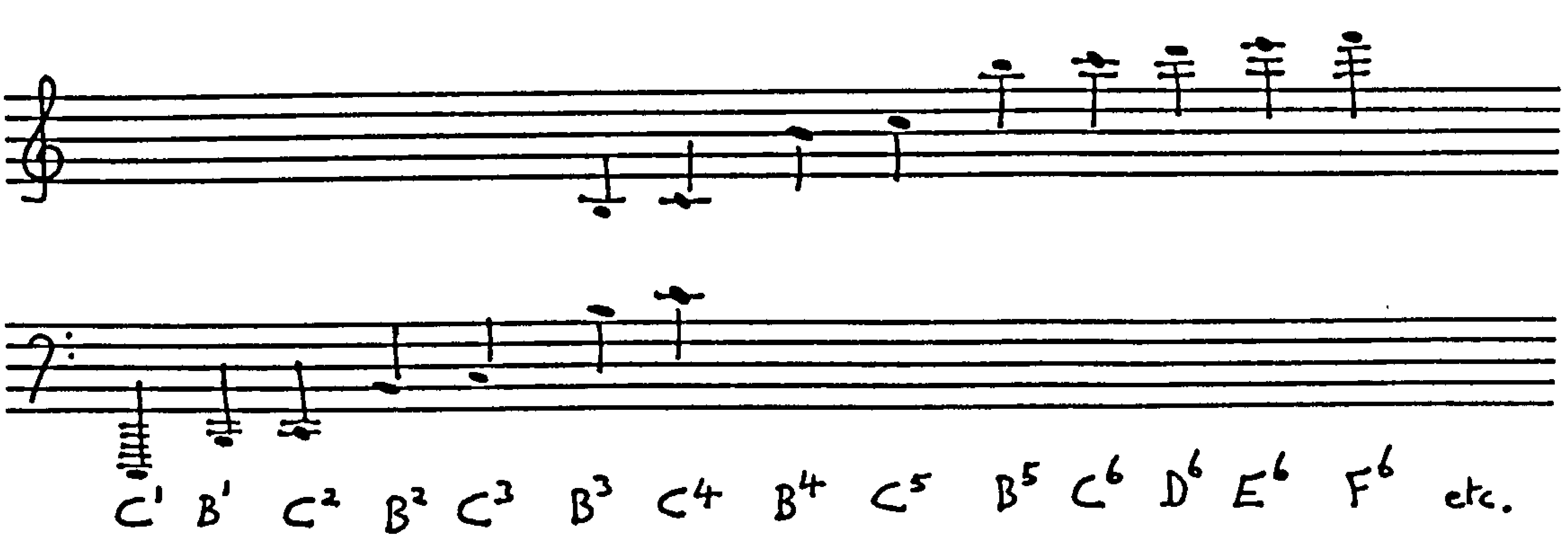
All musical examples are located in volume II. Figures and tables are located in the main text (volume I) where possible, with the exception of oversize figures and tables which are located in volume II. In these cases the location is indicated at the first reference to the relevant figure/table in the text, e.g. Table 4.6 (vol. II).

Pitch-class set terminology

Pitch-class set terminology employed in this study follows Forte (1973). In certain cases sets of cardinality 2 and 10 are also invoked, consistent with those outlined in a number of sources, including Solomon (1982) and Pople (1994). Inversions and transpositions of sets are indicated as follows: 8-22i, $8\text{-}22_{T3i}$. Inversions are identified by their TnI relationship to Forte's prime form, reflecting the established procedure of "transpose last" (Rahn 1980, p. 57, n. 7). Thus the transposition operator (in the above example, 3) refers to normal order read 'anti-clockwise' [5, 7, 9, 10, 0, 1, 2, 3]. The distinction between inverted and un-inverted forms of a set is not always strictly necessary (in the case of genera relations, for example), and it is employed only when relevant to a particular analytical observation.

Designation of register

Where reference is made to specific pitches, the following designation is employed, whereby middle-C is termed C^4.



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Thanks are also due to Richard Parks and Christopher Rouse for their full and generous response to specific questions; John Doerksen and Chris Kennett; and to members of the Department of Music at the University of Newcastle, in particular Ian Biddle. Tony and Andrea Schuman kindly gave permission to obtain copies of materials from various libraries. The assistance of the following is also greatly appreciated: Wayne D. Shirley of the Music Division, Library of Congress; George Boziwick, Curator, American Music Collection, The New York Public Library for the Performing Arts; Staff of the Robinson Library at the University of Newcastle; and the staff of Gloucester City Music Library.

On a more personal note this dissertation is dedicated to Polly, whose unfailing belief and support for this project goes far beyond words. Thanks are also due to my parents and to Cynthia, who, along with T.B. always expressed an interest.

INTRODUCTION

William Schuman's (1910-1992) remarkable multifaceted life as composer, educator, administrator and pillar of the American (more specifically, New York) musical establishment is well documented.[1] The majority of his music is relatively unknown in Great Britain, however, and it is rarely performed or studied even in the United States. The reasons for this neglect are various, and by no means restricted to Schuman's music alone. In a career as a composer spanning more than half a century (c. 1933-1990), the twin themes of "tradition" and "instinct" that underpin many of Schuman's own accounts of his approach to composition suggest a conservatism out of step with the Europe-led avant-garde of the post-war period.[2] While in the various histories of American music, Schuman's achievements as a composer tend to form part of a noble "Grand Tradition" (Chase 1987), wherein composers lay the ghost of an insubstantial musical past, establishing a retrospective 'canon' of works based upon the models of the symphony, concerto and string quartet as a perhaps necessary foundation for more radical work by future generations.

But Schuman's conservatism is philosophical rather than stylistic. From the very beginning his music is determinedly modernist (albeit a 'mainstream' modernism), rejecting the links with functional tonality evident in the music of contemporaries such as Howard Hanson or Samuel Barber, and the overtly nationalist, folk inspired idiom of the 'popular' Copland.[3] From an early style owing much to the influence of his principal teacher Roy Harris and the musical vocabulary (if not the aesthetic philosophy) of

[1] For a review of the principal sources see Chapter 1.
[2] Schuman is at pains to stress the instinctive nature of his approach in a number of sources (Cf. Ramey 1980, p. 17, Clark 1982, pp. 238-39).
[3] Like Copland, Schuman composed a number of works in a more deliberately popular vein, but the core of his output is determinedly serious in intent. Examples of 'lighter' works include perhaps his most frequently performed piece, the *New England Triptych* (1956), based on tunes by William Billings.

neoclassical Stravinsky, Schuman forges an independent path that sees his instinctive and highly personal musical language undergo a fascinating, and almost continuous stylistic evolution. The visceral impact of Schuman's best music is captured by Jacob Druckman (1980), writing of his early experience of it in the 1940s:

> It was shocking, not because the sounds were new. They weren't. In fact, the formal procedures and harmonic language often seemed to have much in common with the more conservative music of the time. But it was the incredible level of energy with which the music plunged forward that was and is shocking. That and the unabashed passion. To ears more used to European circumspection and complexity, it seemed a music without guile, with all its nerve ends exposed, singing and shouting without stopping to breathe, knowing exactly were it had to go and charging there relentlessly and shamelessly.

The sense of surety and confidence portrayed here is vividly borne out by the music, while the lack of "guile" is heard in the formal clarity that is a hallmark of Schuman's style.[4] The broad sweep of the music is clear and communicative, and yet the means by which the formal articulation and the dynamic momentum are achieved are often elusive, reflecting Schuman's "instinctive" approach to the process of composition; the directness of the effect often belies the sophistication and complexity of its cause.

From an analytical standpoint Schuman's compositional "instinct" offers an irresistible challenge to probe behind the immediate formal rhetoric in order to develop a clearer understanding of his musical language, and nowhere are Schuman's instincts more vibrantly engaged than in his symphonies. As a prelude to the analyses that follow, Chapter 1 provides a necessarily brief overview of Schuman's career, with particular emphasis given to the social, historical and aesthetic placement of his work in the broader context of the Grand Tradition. The following chapter then explores the rationale for the choice of analytical methodology in relation to a survey of the defining characteristics of Schuman's musical language, drawing upon a range of examples,

[4] For Sheila Keats (1974, p. 76), "There is a clarity of both form and texture in his music: he is a clean composer."

including the early String Quartet no. 2 (1937), and the piano cycle *Voyage* (1953). From this informal and empirical survey, Chapter 2 goes on to examine specific analytical issues in greater depth.

The analyses at the heart of this study engage three symphonies (nos. 3, 6 and 9) spanning almost a thirty year period (1941-1968). Symphony no.3 (1941), represents perhaps the finest product of Schuman's early maturity and provides an opportunity to examine the key elements of his musical language in greater detail (Chapter 3). These founding principles are shown to underpin all of Schuman's subsequent music to a greater or lesser extent, regardless of more obvious changes in harmonic or thematic vocabulary. Many of the rhetorical gestures and formulae associated with the symphonic repertoire of the Grand Tradition are seen to be reinterpreted in the context of a post-tonal musical language that owes much to Stravinskian neoclassicism. Indeed the neoclassical orientation, seen in the adoption of formal archetypes of passacaglia, fugue, chorale and toccata, reinforces the debt to Stravinsky in a work that is hard to characterise as 'symphonic'. Carefully controlled extended diatonic collections form a harmonic backdrop to a formal process focussed upon thematic unity and variation, but the elements of development and dialectic, traditionally associated with the symphonic form, are largely absent.

It is the significant shift away from such archetypal models towards a more fluid and dynamic concept of symphonic form that characterises Schuman's stylistic evolution, with the works examined occupying pivotal positions along that course. In anticipation of these developments, Chapter 4 addresses issues surrounding the modelling of the thematic and harmonic materials of the Third Symphony, examined in Chapter 3, in terms of pitch-class set genera, comparing and contrasting the different approaches promulgated by Allen Forte and Richard Parks. The potential of pitch-class set genera theory as a means of revealing structural articulations within works, and, more broadly, stylistic changes over the course of a composer's oeuvre as a whole, has been much discussed in recent years, but at the time of writing, large scale studies are few.[5] The application of generic theory to Schuman's music affords the opportunity not only to gain a greater understanding of the music itself, but also to assess the effectiveness of genera theory in relation to this and similar repertoires.[6] The changing characteristics of Schuman's musical vocabulary and the increasingly fluid approach to form are seen to be important factors in the relationship between theoretical model and musical object. In a sense, then, the subject of this dissertation is also the process of analysis itself.

The Chorale movement of the Third Symphony, examined in Chapter 5, foregrounds further important characteristics of Schuman's musical language. The greater emphasis upon the harmonic domain, afforded by this predominantly homophonic setting, serves to highlight the influence upon Schuman of Roy Harris's theories of harmony, and the "historicist" inclination of his teaching. The interaction of a contextually defined structural framework and the subtle deployment of tonal allusion effectively underlines Schuman's "modernist dilemma" as a symphonist in the mid-twentieth century. In the light of subsequent developments, the Chorale of the Third Symphony is also seen to presage the closer integration of thematic and harmonic materials.

Perhaps conscious of the essentially 'anti-symphonic' restrictions imposed by neoclassical formal archetypes, Schuman takes the most significant step along the path to a more dynamic symphonic form in the Sixth Symphony (1948). The analyses of this work focus upon the twin elements of development and harmonic identity that are

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[5] A full assessment of work in this area may be found in Chapter 2.

[6] The need for a range of such studies as a first step in the empirical exploration of generic theory is highlighted by Forte in his original article on the subject (Forte 1988b, p. 263). In addition to the work of the composers already mentioned, works amenable to such examination might also include examples by Sessions, Copland, Riegger, Ruggles and Carter, to name only Schuman's fellow Americans.

central to Schuman's symphonic evolution. In Chapter 6 Roy Harris's concept of "autogenetic development" is examined through the analysis of a long, continuously evolving melodic line. Schuman is seen to extend the process, generating a range and variety of materials far greater than those encountered in any work by his former teacher. While in the Third Symphony Schuman's concern for unity was expressed monothematically, the new approach is rooted in a distinctly Schoenbergian view of organicism and "unity in diversity". Drawing on Schoenberg's writings on developing variation, the analysis examines Schuman's "instinctive" process of development, revealing a carefully paced path of development and growth, from an initial statement that forms a discrete and clearly articulated *Grundgestalt*. The opening statement of the work is also shown to harbour a harmonic duality that is played out across the symphony as a whole. Focussed about two triad-based tetrachords, one diatonic, one chromatic, the precise nature of this duality, and the construction of effective models in terms of pitch-class set genera, is the subject of Chapter 7. From what might be seen as diametrically opposed perspectives, the generic models of Parks and Forte highlight aspects of the work's pitch structure that raise important questions regarding the nature and extent of musical autonomy when viewed in the wider, socio-political context.

The summation of this trend towards a greater formal cohesion, embracing the extensive development of materials and the closer integration of melody and harmony, is achieved in the Ninth Symphony *"Le Fosse Ardeatine"* (1968). In terms of stylistic evolution, perhaps the most striking development is heard in the consistent deployment of the total chromatic throughout the musical texture in a manner that occasionally approaches, but never fully embraces, serial procedures. Familiar devices and techniques are seen to underpin the musical structure, but the overriding impression is one of almost continuous development. In this sense, and in spite of a musical vocabulary far removed from that of earlier works, it is perhaps the most

'Schumanesque' of the works considered here. The process of "autogenetic development" is all-pervasive, posing particular challenges to analysis and to genera theory in particular.

Written in the aftermath of a deeply moving visit to the "Le Fosse Ardeatine" memorial in Rome, the Ninth Symphony represents Schuman's compositional practice at its most intuitive, reflecting a very particular "unabashed passion". Theoretical models of musical autonomy are subject to further scrutiny in the face of a unique and instinctive voice "knowing exactly were it had to go" in response to events far beyond the concert hall.

PART 1:

HISTORICAL AND ANALYTICAL CONTEXTS

CHAPTER 1

SCHUMAN'S LIFE AND MUSIC

The most comprehensive and reliable source of information covering both Schuman's career (to 1980) and, in general terms, his music is that by Christopher Rouse (1980). An earlier and more detailed treatment of Schuman's life and music is to be found in Flora Schreiber and Vincent Persichetti (1954), which in turn forms the source of many subsequent articles on the composer and his music. More recently a valuable and comprehensive account of published source materials has appeared in K. Gary Adams (1998), including a brief biography (largely after Rouse 1980), lists of works and performances, discography and bibliography. Also useful in charting the contemporary critical reaction to a number of works by Schuman (and other American symphonists) is Julie Schnepel's (1995) dissertation.

Serious analytical studies of Schuman's music are few in number. Only two consider specific works in any depth. Lily McKinley (1977) adopts a style analysis approach (after La Rue 1970) in comparing Schuman's Third and Ninth Symphonies, and includes an account of an interview with Schuman. A similar approach is adopted by John W. Clark (1982) in comparing one-movement symphonies by Harris, Schuman, Persichetti and Fricker. Clark considers Schuman's Second, Sixth, Seventh and Ninth Symphonies, comparing thematic materials, rhythm and tempo, harmonic materials, texture, orchestration and instrumentation and finally structure with nine works by the other named composers. The wide scale of the enquiry allows for little more than general observations, however. Clark's study includes transcriptions of interviews with the composers; that with Schuman is reproduced in part in Clark (1986). A number of minor American dissertations examine various aspects of Schuman's work (see Bibliography).

Of the many articles and interviews published during Schuman's later years, those by Keats (1974), Ramey (1980), Dickinson (1985a and 1985b), Hall (1985) and Dufallo (1989) are perhaps the most informative and reliable. The following biographical sketch will not attempt to produce a comprehensive account of Schuman's life and work, but aim, rather, to highlight particular events and circumstances that might be seen as relevant or formative in Schuman's development as a composer. This account follows Rouse (1980) regarding the major events and turning points in Schuman's career. All page references are to this source unless otherwise stated.[1]

A Biographical sketch

Born 4th August 1910 in New York City, Schuman's childhood encounters with music were strictly recreational. He learnt the violin, and teamed up with Edward B. Marks (son of the music publisher) at summer camp to write a minstrel show and a musical comedy called *It's up to Pa.* Schuman's first attempt at composition, a tango for violin entitled "Fate" stems from around this time (c.1926). Later, while at George Washington High School he formed a jazz band, "Billy Schuman and his Alamo Society Orchestra". Perhaps the most significant feature of Schuman's musical activities at this time was his pragmatic approach to tackling a variety of musical instruments, depending upon the needs of the moment, including clarinet, banjo and doublebass. For Rouse,

[1] I am indebted to Christopher Rouse for his prompt and generous response to a number of questions.

"[h]is tactile understanding of each instrument was undoubtedly a factor in his later pre-eminence as an orchestrator" (p. 2).

In 1928 Schuman entered New York University School of Commerce, whilst also working part-time at the Paramount Advertising Agency. During this time he continued to write popular songs, most notably in collaboration with the lyricist Frank Loesser. While not enjoying huge success, Schuman did provide the music for Loesser's first published song "In Love With a Memory of You" (p. 4).[2]

The story of Schuman's introduction to "serious" music and his dramatic conversion from Tin Pan Alley to the formal study of harmony and counterpoint is well known and often told.[3] Accompanying his sister to New York Philhamonic concert at Carnegie Hall on April 4, 1930, Schuman was so affected by the experience that "[w]ith the impetuosity of youth he decided instantly that he must compose serious music" (p. 4). Not given to idle contemplation, Schuman withdrew from New York University the following day:

> Without any clear notion of his future, and wanting time to think, he walked home from the Washington Square Campus - more than a hundred blocks! On the way, at West End Avenue and 78th Street, he noticed a sign on what looked like a private residence - "Malkin Conservatory of Music." He entered. Asking the receptionist what he must do to become a composer, he was told to begin harmony lessons and was put in touch with Max Persin, a well known teacher of harmony in New York (p. 4).

In addition to harmony with Persin, Schuman began lessons in counterpoint with Charles Haubiel. The following summers of 1932 and 1933 saw Schuman enrolled in courses at the Juilliard School, taking harmony with Bernard Wagenaar and orchestration with Adolf Schmid, followed, typically, by the pragmatic step of teacher

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[2] According to Schuman, "Frank Loesser's first published song had my music and as far as I can recall, it's one of his few flops. Considering the record he managed to achieve, I can't blame his lyrics" (Freedman 1976, p. 15).
[3] Cf. Rouse (p. 4), Schreiber and Persichetti (1954, pp. 7-9), Hitchcock (1980, p. 14), Keats (1974, p. 69) and Saylor (1986, p. 166).

training at the Teachers College of Columbia University (p. 5). Following his graduation in 1935 (and a summer spent in Salzburg) he took up a post at the Sarah Lawrence College where he began to put into practice some of his ideas on music education that were to find their most notable expression in his later re-organisation of the curriculum at the Juilliard School.

By now Schuman had a number of completed works to his credit, including the *Chorale Canons* (1932-33), later published by Schirmer in 1942 under the title *Four Canonic Choruses*, which drew favourable comment from Daniel Gregory Mason when Schuman submitted the work for the Columbia University Bearns Prize in 1935.[4] Less well received was his Symphony no.1, submitted the following year. It was this rebuff that saw Schuman seek the advice of a composer who was to become his most influential teacher, Roy Harris. While Haubiel undoubtedly furnished Schuman with a sound grasp of counterpoint, it was Harris who effectively laid the foundations for Schuman's development as a composer.

In the autumn of 1936 Schuman heard three of his works played at a Composers' Forum Laboratory of the Works Progress Administration (Symphony no. 1, String Quartet no. 1 and *Chorale Canons*). Although he was dissatisfied with both the Symphony and Quartet, Schuman pressed on, producing five new works in 1937, including his Symphony no. 2. Entered for a competition set up by the Musicians' Committee to Aid Spanish Democracy in 1938, Schuman's symphony came to the attention of Aaron Copland, who in turn recommended the work to Serge Koussevitsky for performance by the Boston Symphony Orchestra in February 1939.[5] Copland (1938, pp. 245-46) followed up his recommendation with the following remarks in *Modern Music*:

[4] See list of works in Adams (1998, p. 25).
[5] For Schuman's account of these events, see Copland and Perlis (1984, pp. 350-55).

> Schuman is, so far as I am concerned, the musical find of the year. There is nothing puny or miniature about this young man's talent. If he fails he will fail on a grand scale. His eight part chorus *Pioneers* [...] tries characteristically for big things. It is carefully planned music - music of design rather than melodic inspiration. When planning is too evident, as it sometimes is, the effect is unspontaneous. But for the most part this is music of tension and power - a worthy match for Walt Whitman's stirring text. From the testimony of this piece alone, it seem to me that Schuman is a composer who is going places.[6]

Schuman's commitment to composing music of serious intent on a large scale, is evident in this initial assessment by Copland. In this respect it bears comparison with Druckman's appreciation, cited in the Introduction. The apparent paucity of melodic invention within a predetermined formal framework gives little indication of future developments, however. Only in later years would Schuman demonstrate the confidence and experience to give his musical instincts free rein.

It was the performance by the Boston Symphony Orchestra that really set Schuman on the road, however. Although the symphony was not well received, Schuman found a valuable new ally in Koussevitsky.[7] He followed up the Symphony with what has since become one of his best known works, the *American Festival Overture* premiered by Koussevitsky in October 1939. In retrospect this association with Koussevitsky and the Boston Symphony Orchestra can be seen as integral to Schuman's distinctive approach to the orchestra. Interviewed in 1986 (in Dufallo 1989, p. 389), Schuman was candid:

> I was very spoiled having Koussevitsky's interest. You can appreciate a conductor being in a position to say, "Everything you write, I will play. All you have to do is write it and I will play it." How extraordinary! So I grew up knowing the Boston Symphony would play whatever I wrote. I just took a virtuoso symphony orchestra for granted.

[6] Cited in part by Rouse (1980, p. 9), and Schreiber and Persichetti (1954, p. 16).
[7] On Koussevitsky's impact on the American musical scene, see Leichtentritt (1978).

Schuman's ability to exploit this remarkable facility permeates his scores from this point on. His writing for brass in particular exhibits a distinctive audacity, reflecting Copland's (1980, p. 55) view of the American orchestral sound:

> Our orchestras by comparison with those abroad, are energised and glamorized: they play with a golden sheen that reflects their material well-being... More typical is the glorified tonal approach, although our orchestras still have not reached the steely brass perfection of a jazz combination's attack. But something of the same compulsion to "wow" an audience through the sheer power of tonal magnificence is present.

Ironically, it is precisely the ease and facility with which Schuman handles such resources that manifests itself as a perceived weakness in certain later scores (see, for example the account of the Seventh and Eighth Symphonies below).

Schuman followed the success of the *American Festival Overture* with his String Quartet no.3 (1939) and *This is Our Time* (Secular Cantata no.1) for mixed chorus and orchestra (1940), but it was the Symphony no.3 (1941) that perhaps did most to consolidate his burgeoning reputation. Reviews were "almost unanimously ecstatic" (p.10) and the work received the first Music Critics Circle Award.[8] Symphony no. 4 (1942) followed hard on the heels of the Third, followed by *A Free Song* (Secular Cantata no.2) which was to receive the first Pulitzer Prize for music in 1943. The Symphony for Strings (no.5) was heard to popular acclaim in the same year, Edward Downes (sleeve note MS 7442) recalling that "[t]he work was an immediate success, promptly published and recorded, widely performed and broadcast in this country and abroad, and for many years acclaimed as Schuman's finest work."

Now Director of Chorus at Sarah Lawrence (since 1939) Schuman continued to compose at an impressive rate. Perhaps the most significant event in terms of his stylistic development, around this time came in the form of a commission for a new

[8] Cf. Schnepel (1995, pp. 472-81).

ballet score from Anthony Tudor. The result, *Undertow* (1945) is darker in tone (as its subject matter dictates) and sees a significant expansion of Schuman's harmonic vocabulary. Virgil Thomson (1948b, p. 159) detected a expansion in the expressive range of Schuman's ballet score, stating that,

> viewed freshly through his new-found medium, Schuman turns out to be not at all the composer of small expressive range and assumed monumental proportions that his concert music has long led one to consider him, but a man of high, of spectacular expressive gifts who has been constricted by the elegant abstractions of the American concert style - and a little bit, too, perhaps, by his youth. The concert forms have been good schooling for him, but he has never expressed himself in them with any freedom. The theatre gives him elbow room.

The expanded expressive range that Thomson detects here is perhaps the key to Schuman's later development as a composer. Certainly the Sixth Symphony that followed three years later bears the imprint not just of an expanded harmonic palette, but of an expressive involvement and intensity rarely heard in his earlier concert works.

Schuman's first step into his administrative career was a large one, and was almost immediately followed by an even greater professional coup. With the death of Carl Engel in May 1944 Schuman accepted the position of Director of Publications with G. Schirmer Inc., working part-time until the expiration of his Sarah Lawrence contract in June 1945.[9] Soon after assuming this new post, however, he was approached by the Board of Directors of the Juilliard School of Music regarding the position of President.[10] Schuman's condition of acceptance was to be allowed to make radical and sweeping changes to the organisation and curriculum. With these terms agreed,

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[9] Interestingly, Schuman mentions that he "worked for [Stravinsky] as an editor at one time" Clark (1982, p. 235). Unfortunately the precise nature of this connection is difficult to pin down, particularly as Stravinsky appears to have had no dealings with Schirmer's during this period.

[10] For the full story surrounding Schuman's appointment see Rouse (1980, pp. 13-15), Schreiber and Persichetti (1954, pp. 29-31) and Erskine (1973, pp. 252-58).

Schuman took up the position in October 1945 and held it until January 1962. The results of Schuman's reforms are outlined in Goldman (1953).[11]

The following year (1946) saw the first performance of *Truth Shall Deliver* for male chorus, and the beginning of work on a violin concerto. The advances in Schuman's style detected in *Undertow* were taken still further in another ballet score, this time for Martha Graham, *Night Journey* (1947). For Rouse "the 'new Schuman' burst forth fully in the ballet *Night Journey*...[I]t preserved the static harmonies that had begun and ended *Undertow*, but the violent and anguished music of the climactic 'Bacchanal' was of a sort hitherto unknown in Schuman's work" (p. 15).

By Schuman's earlier standards the next few years were relatively sparse in terms of the number of works produced. This no doubt reflects the constraints upon his time imposed by his new position, but it also symptomatic of problems directly associated with the implications of a new musical language. Two works in particular appear to reflect Schuman's shifting compositional perspective around this time, the violin concerto and the Sixth Symphony. The violin concerto, commissioned by Samuel Dushkin, appeared in three different guises between its inception in 1946 and the première of the final version in 1959. According to Rouse,[12] Schuman

> expressed "dissatisfaction" with it in its various forms until the 1959 final version [...] Originally, it was a three-movement concerto with a lyrical and very tonal central adagio, not unlike the song "Orpheus with his Lute". He confessed to me that he found it, at the time of the première, too sentimental, especially in the light of the more chromatic language he had been using since *Undertow*. He therefore replaced the movement with something both more dissonant and more sprawling [...] After the second version was premiered, he remained unhappy with the beginning of the second movement and added a big, brassy fanfare in 1959, composed very much in his more rhetorical style of that time.

[11] For a student's-eye view of Schuman's regime, see Dickinson (1960).
[12] Personal correspondence, November 23, 1997.

Similarly, compared with the comparative ease with which the earlier symphonies had emerged, the Sixth proved to be a long and difficult ordeal (p. 16).[13] The first of Schuman's single movement symphonies (discounting the withdrawn Second Symphony), it was first performed on 27 February 1948. Stylistically it occupies a very different world to the previous Symphony for Strings. For Dickinson (1985a, p. 458) "earlier techniques are refined, the edge is harder, at times suggesting Varèse - whose orchestral works were not to be revived until the 1960s." Rouse, meanwhile, sees "[t]he ground gained with *Night Journey* [...] consolidated" (p. 16).

Schuman did not return to the symphony until 1960, twelve years after the première of the Sixth. Compositional landmarks in the immediate aftermath of the Sixth Symphony include the ballet score *Judith* (1949) written for Martha Graham,[14] and the String Quartet no.4 (1950). Writing of the Quartet, Copland (1951, p. 394) too notes significant changes in Schuman's style in comparison with earlier works:

> The old full-throated, free-singing eloquence, so characteristic of some of his best pages, is little in evidence. Instead a more tentative expressivity has taken over; a darker, more forbidding tone that seems far different from the basically optimistic - sometimes boyishly optimistic - tone of his earlier music.
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> Much of this darker texture comes from the harmonic fabric, which is less tonally defined than in former works by this composer, and teeters on the edge of the atonal. I may be wrong, but it seems to me I detect, if not an influence, then a stimulus to the composer's thinking from contact with the music of Roger Sessions.

Copland detects here a shift towards a Schoenbergian 'organicism', in which the musical materials are heard to be in an almost constant state of development, and a

[13] The circumstances surround the inception of the project are considered further in Chapter 6. By contrast, it was noted earlier that the Fourth Symphony had appeared with almost indecent haste on the heels of the Third. Similarly, Schuman recalled that "[w]ith the Fifth Symphony [for Strings] I was so young and cocky I had it published before I'd even heard it" (in Clark 1982, p. 250).

[14] The background to the composition of *Judith* is closely tied in with the difficulties being experienced by the Louisville Orchestra at this time. See Belfry (1991). Schuman received the New York Critics Circle Award for the work in 1951.

greater integration of harmonic and melodic materials. It is perhaps in this respect that the reference to Sessions seems most prescient.

Perhaps by way of a respite from the intensity of these works, Schuman embarked in 1951 upon a relatively light-hearted opera *The Mighty Casey* to a libretto by Jeremy Gury, based upon the poem by Thayer. The project occupied Schuman until the première on May 17, 1953, and is representative in its style of a number of lighter projects to which Schuman turned over the years. Among these might be included *Newsreel (In Five Shots)* (1941), the *New England Triptych* (1956) based upon tunes by William Billings, and a number of choral works including *The Orchestra Song* (1939) and *Mail Order Madrigals* (1971).[15]

The 1950s also saw the production of Schuman's only extended work for solo piano *Voyage* (1953),[16] and in 1953, the striking orchestral *Credendum (Article of Faith)*. The end of the decade heralded two significant developments, one stylistic, and one 'professional'. Stylistically, the *Carols of Death* (1959) for mixed chorus are widely held to herald a new phase in Schuman's work, referred to by Rouse (p. 18) as "rhetorical":

> The "rhetorical" scores are increasingly dramatic. Textures are simplified, and complex polyphony occurs less frequently. Harmonic rhythm [...] becomes noticeably slower, and the ratio of slow music to fast becomes markedly greater [...] The composer's use of dissonance becomes freer, and the dissonant harmonies themselves become even more pungent.[17]

The new rhetorical phase embraces two aspects of Schuman's stylistic development. The continued expansion of the harmonic palette, leaving the extended diatonicism of the earlier period far behind, is highlighted in the Seventh Symphony (1960) by the inclusion, for the first time, of "a full orchestral chord containing all

[15] The parallels here with Copland's 'popular' works such as *El Salon Mexico* (1936), the ballets *Billy the Kid* (1938) and *Rodeo* (1942), are considered further below.
[16] Orchestrated for Martha Graham as *Voyage for a Theatre*, but subsequently withdrawn in that form.

twelve notes of the chromatic scale" (p. 19). But there is also a sense in which the Schoenbergian concern for formal cohesion and development, discussed above, is subsumed in favour of more immediate, affective gestures.

It is in response to works such as the Seventh and Eighth symphonies, that a number of commentators have drawn critical attention to a tendency on Schuman's part "to bully the ear" as Stephen Walsh puts it (1980, p. 462). Consider Wilfred Mellers (1987, p. 79), writing in 1964:

> [T]here is something about the Seventh Symphony and (still more) the United Nations piece *Credendum* which is not so much grand as monstrous. The sheer professional efficiency of the music turns it into an emotional bulldozer; we are left physically shattered and deflated by the rumbustiousness of the gestures.

While these remarks present the case in rather extreme terms, Mellers does have a point. Recalling Copland's comment (above) on the characteristic sound of the American orchestra, Schuman does demonstrate a "compulsion to 'wow' an audience through the sheer power of tonal magnificence" in these works. More specifically, there is a tendency to conclude with triumphant, often triadic, perorations that can appear, in the absence of traditional tonal function, to be asserted rather than emerging as a consequence of the musical argument. (Hear, for example, the blaze of D major that marks the end of *Credendum*, or, in the case of the Seventh Symphony, the "hysterical peroration [...] complete with E flat major ending to the epic" (Dickinson 1985b, p. 35)). Philip Ramey (sleeve note Nonesuch 79072) makes a veiled reference to the problem in his praise for one of Schuman's finest late works, *American Hymn* (1980):

> Schuman's instrumentation is seldom colouristic; rather, it is structural, best thought of as part of the ongoing compositional process. In his finest scores (Symphonies Nos. 3, 6 and 9, for instance), the ear does not revel in instrumental sonority for its own sake but, instead, attention focuses on the melodic flow of

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[17] See also Saylor (1986, p. 168), cited below.

> the music, the clear development of materials, and the convincing continuity that informs all of Schuman's large-scale works.

The implication regarding the temptation to "revel in instrumental sonority for its own sake" aside, Ramey's appreciation of Schuman's finest work highlights a number of the central themes of the analyses presented here.

It is perhaps significant that many of the works that appear to demonstrate this trait should have been written in response to high profile commemorative commissions; Symphony no.7 in celebration of the 75th anniversary of the Boston Symphony Orchestra, Symphony no. 8 to open the first New York Philharmonic Orchestra Season in the new Lincoln Center for the Performing Arts, and, in similar vein, the Tenth Symphony for the American Bicentennial celebrations in 1976.[18] It is hardly surprising that these works should demonstrate the bolder, more gestural side of Schuman's compositional nature, nor that they should be subject to more pronounced critical coverage. By contrast a number of, arguably, more musically integrated works representative of a more introspective, private side to Schuman's personality have received less critical attention. Describing the contrasting elements evident in Schuman's music from the Seventh Symphony onwards, Peter Dickinson (1985b, p. 35) senses a "characteristic conflict between public and private worlds."

Schuman's administrative career had taken a new turn in 1959, when he was approached by John D. Rockerfeller to head the proposed new Lincoln Centre for performing arts. Schuman accepted the post, and his tenure began on 1st January 1962.[19] With the mounting pressures of his new position, it seems remarkable that Schuman was able to compose at all in the coming years, but there is no doubt that

[18] Significantly, the Seventh Symphony draws upon a number of earlier works, notably a film score *The Earth is Born* (1959), and, for the second movement, the second of the *Three Piano Moods* (1958), while the Eighth Symphony (premièred on October 4, 1962) also draws upon earlier work in the form of the third and fourth movements of the Fourth String Quartet (1950) which are reworked to form the last two movements of the three movement symphony.
[19] For more on this, see Rouse (pp. 19-21).

productivity was curtailed to some degree. The only works of substance were *Amaryllis (Variations for String Trio)*(1964), and a ballet score for Martha Graham, *The Witch of Endor* (1965), since withdrawn.

Schuman's public and private musical personas achieve perhaps their most convincing synthesis in the Ninth Symphony of 1968. For Saylor (1986, p. 168) it "is perhaps the finest of the later works; its dark solemn mood, unity of form and detail, and slow-fast-slow plan recall the Sixth Symphony." Significantly this is the only symphony to carry any extra-musical association. Subtitled *Le Fosse Ardeatine*, it was written in response to a visit to the memorial to the 335 Italians shot by the Germans in reprisal for the deaths of thirty-two German soldiers killed by the underground in Rome on March 24, 1944. Schuman provides a lengthy preface to the score chronicling these events and outlining his response in the work.

> The mood of my symphony, especially in its opening and closing sections, is directly related to emotions engendered by this visit. But the entire middle section, too, with its various moods of fast music, much of it far from somber, stems from the fantasies I had of the variety, promise and aborted lives of the martyrs. Candidly, however, there is no compelling musical reason for my adding to the title Symphony No. 9. The work does not attempt to depict the event realistically. And its effect on the emotional climate of the work could have remained a private matter. My reason for using the title is not then, musical, but philosophical. One must come to terms with the past in order to build a future. But in this exercise I am a foe to forgetting. Whatever future my symphony may have, whenever it is performed, audiences will remember. [20]

The solemnity of its subject matter is clearly reflected in the serious tone of the work and a notable reining in of the "rumbustious gestures" decried by Mellers a few years earlier, fully justifying Saylor's assessment.

Schuman continued in this sombre vein in his next work *To Thee Old Cause* (1968) for oboe, brass, timpani, piano and strings. The commission was originally intended to celebrate the 125th anniversary of the New York Philharmonic, but the deaths of Martin Luther King Jr. and Robert Kennedy prompted a more subdued response (p. 24). The sense of musical continuity and emotional common cause between the Ninth Symphony and *To Thee Old Cause* is explored further in Chapter 8.

In April of the same year (1968) Schuman suffered a mild heart attack that led, ultimately, to him resigning from his Lincoln Centre post with effect from the end of the year. In subsequent years he remained closely involved in many aspects of American musical life, not least as Chairman of the Norlin Foundation from 1975.[21] While a number of works written during Schuman's "retirement" recall the rhetorical, "public" aspect of earlier works (for example *In Praise of Shahn (Canticle for Orchestra)*, first performed in January 1970, or the Tenth Symphony of 1975), a pronounced feature of Schuman's later works is a renewed interest in the interaction and juxtaposition of tonal and non-tonal elements. Subtle tonal allusions are often encountered in Schuman's early music, and are examined in detail in respect of the Third Symphony (Chapter 5). In Schuman's later work, however, the co-existence of tonal and non-tonal elements frequently results from the choice of tonal melodic material as the object of extended variation. Typical, though contrasting, examples are to be heard in the engaging *Concerto on Old English Rounds* (1973) for solo viola, women's chorus and orchestra, and chamber works such as *In Sweet Music (Serenade on a Setting of Shakespeare)* (1978) for voice, flute (doubling alto flute and piccolo), viola and harp, and one of Schuman's last works, the String Quartet No.V (1989), the second movement of which is based upon a seventeenth-century Dutch carol. A similar re-examination of earlier material may be heard in other works from Schuman's final years, notably the *Three Colloquies for French Horn and Orchestra* (1979), drawing upon the discarded slow movement of the Violin Concerto from 1947, and *American Hymn, (Orchestral Variations on an Original Melody)* of 1980, based upon the 1956 solo song "The Lord

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[20] Preface to the published score, Merion Music Inc., (1971).
[21] For a list of Schuman's numerous affiliations, see Rouse (pp. 28-29).

Has A Child". In both of these pieces a more sophisticated productive tension is created between the tonal and non-tonal materials in a ways that seem to transcend the triadic perorations of certain earlier "rhetorical" works, but there is an undeniable sense of retrospection in these later works. In terms of the stylistic evolution described above, it is the Ninth Symphony that represents its apotheosis.

This necessarily selective account of Schuman's "life and works" outlines the principal themes and preoccupations that characterise a long and productive creative life. Of equal important, however, is the place occupied by Schuman's music in the wider context of twentieth century music in general and American music in particular.

Schuman's music in context

Looking back over Schuman's remarkable career the extent and diversity of his compositional output is impressive. Running through it all, however, is a preoccupation with that most traditional of forms, the symphony.[22] Interviewed in 1986, Schuman recalled, "[i]t never occurred to me to write anything except symphonies. Before I could write anything I wanted to write a symphony. That seemed to me to be the most logical thing in the world" (in Dufallo 1989, p. 386). In this respect, Schuman is located at the heart of what Peter Burkholder (1983, p. 116) describes as a "historicist mainstream" in 20th century music, comprising,

> music written for an audience familiar with the art music of the 18th and 19th centuries, by composers who were or are themselves highly informed members of that audience who wrote or write music with a concern both for continuing the tradition of European art music, particularly its aesthetic assumptions and its understanding of the relationship between artist and audience, and for

[22] That the symphony is central to Schuman's oeuvre is a view shared by Dickinson (1985a, p. 457), and Saylor (1986, p. 167).

distinguishing their own work stylistically from other composers, both predecessors and contemporaries.

It may seem ironic that nowhere was this tendency more strongly represented than in a country apparently seeking to distance itself from the tyranny of European musical influence, the United States. Schuman's emergence as a composer in the late 1930s coincided with a breaking wave of traditionally orientated symphonic works by American composers.[23] As Gilbert Chase (1987, p. 562) describes it,

> By the 1920s a new generation of American composers came to the fore who generally respected - we might even say, admired and cherished - the formal patterns of the Grand Tradition, such as the sonata, the concerto, and the symphony, while nevertheless seeking (in various degrees) idiosyncratic elements of expression.

Chase cites the work of Howard Hanson (1896-1981), Walter Piston (1894-1976), Roger Sessions (1896-1985), Aaron Copland (1900-90), and Roy Harris (1898-1979) at the forefront of this movement, with a second generation of composers adding still further to a burgeoning symphonic literature, among them, Schuman, Samuel Barber (1910-81), Peter Mennin (1923-83), Vincent Persichetti (1915-87) and (perhaps marginally) Virgil Thomson (1896-1989).[24] From a stylistic perspective this is a diverse group. At one end of an imaginary continuum might be placed the overtly Romantic, quasi-Sibelian works of Hanson, with a harmonic idiom firmly rooted in functional tonality, while the other extreme might be occupied by the compact, twelve-tone idiom of Roger Sessions' later works. In the 'middle ground' composers such as Schuman, Mennin and Persichetti, for the most part eschew functional tonality in favour of personal idioms invoking aspects of diatonicism and polychordal harmony. While stylistically diverse, these composers were united by a common purpose, a desire to

[23] For a brief account of composers representing this conservative tendency, see Evett (1955).
[24] Added to Chase's inventory might also be the names of David Diamond (1915-) and Wallingford Riegger (1885-1961).

create a substantial body of American art (i.e. symphonic) music where none had existed before. It is this abundance of activity that has led to the period of the 1930s and 40s being described as a "golden age" in American orchestral music (Mill 1986, p. 425).

The "historicist mainstream" was also strongly represented in the work of the newly arrived immigrant composers. Prominent examples in this context include Stravinsky's Symphony in C (1938-40), and the Symphony in Three Movements (1942-5), both premières conducted by the composer (respectively with the Chicago Symphony Orchestra on 7th November 1940, and with the New York Philharmonic Orchestra on 24th January 1946). Other representatives included Hindemith's Symphony in E flat, introduced by the Minneapolis Symphony Orchestra under Dimitri Mitropoulos on 21st November 1941,[25] and Bartók's final orchestral works, the *Concerto for Orchestra* and the Third Piano Concerto premièred in Boston (1944) and Philadelphia (1946) respectively. Perhaps less influential in terms of their immediate impact, but as representative of the historicist viewpoint as any of the above, were the Violin Concerto (1935) and Piano Concerto (1942) of Arnold Schoenberg.

That this prevailing musical climate should exert a profound influence upon Schuman in his early years as a composer is manifest, not least in his choice of Roy Harris as teacher and the subsequent interest of Aaron Copland and Serge Koussevitsky. Harris's historicist orientation is captured in Dan Stehman's (1984, p. 23) account of his style which he finds,

> indebted for many of its important characteristics to the examples provided by the magnificent bodies of Gregorian and Ambrosian chant; by masters of the Renaissance such as Josquin, Lassus, Palestrina, and Victoria; and by later composers as diverse as J.S. Bach, Beethoven, Tchaikovsky, and Franck.

[25] Prior to Schuman's appointment to Juilliard, it was another work by Hindemith (*Mathis der Maler*) that Schuman had used refute John Erskine's claim that modern music had no melody in a panel discussion at the New School for Social Research (see Keats 1974, p. 72).

The significance of this heritage and the inherently organic, historicist orientation of Harris's concept "autogenetic development", is considered further in Chapter 6. Schuman, meanwhile, nails his historicist colours firmly to the mast, selecting no less a figure than Beethoven as "perhaps the greatest influence" (Clark 1982, p. 236) upon his approach to symphonic writing.

Two more elusive, but none the less important, facets of the cultural climate also bear upon Schuman's early musical development: the desire on the part of a number of composers, most famously Copland, to produce music of greater accessibility to the public, and the prominent position of popular music in Schuman's early musical experience and in society at large.[26] Copland's well documented interest in the "blues and the snappy number" stemmed from the 1920s and was relatively short lived.[27] However, his drive towards a more publicly accessible music was at its peak during Schuman's formative years, the late 1930s and early 1940s, as seen in works such as the dance scores *Billy the Kid* (1938), *Rodeo* (1942) and *Appalachian Spring* (1943-44). This concern for communication with the public was by no means unique to Copland, rather it reflected a growing sense of social responsibility among American composers engendered by the economic privations of the 1930s and, subsequently, the involvement of America in the Second World War. A focal point for debate was provided by the Composers' Forum Laboratories of the Works Progress Administration, with one of the most active centred in New York. Barbara Zuck (upon whose work these aspects of the following discussion is based) cites the opening address given by the instigator of the Composers' Forum Laboratories, Ashley Pettis (in Zuck 1980, p. 171):

> The purpose of the Composers' Forum-Laboratory is manifold in its nature. Not only are we interested in the composer and his work, *per se*, but in the

[26] For an account of these trends, see Hitchcock (1988, pp. 217-21).

[27] See, for example, Copland and Perlis (1984, pp. 95 and 117-34). Copland's reference to limitations inherent in the "blues and the snappy number" is cited in Berger (1953, p. 49).

> development of a more definite understanding and relationship between the composer and the public

Concert presentations of new works were followed by discussion sessions between composer and audience. Zuck's account of these sessions draws a picture of politically charged encounters with "commentators constantly demand[ing] social relevance as well as comprehensibility from the music they heard" (ibid., p.174). An important additional theme, however, was the issue of national identity with "frequent questions pertaining to nationalism and the 'American' qualities of American music" (ibid., p. 175). Zuck's analysis of Forum transcripts "reveal an audience actively pressing composers for a particular type of music [...] [T]he demand was fairly consistent for music with an 'American' sound, with contemporary societal relevance - music which appealed to the participants as twentieth-century Americans" (ibid., p. 176).

Schuman's encounter with the Composers' Forum in 1936 was, as noted above, a formative experience. It is worth noting, however, that while Schuman apparently took some account of poor audience response in withdrawing his First String Quartet and First Symphony, he did not seek to overtly "Americanise" his music. Even a work such as *Prayer in Time of War* (1943), written as a conscious contribution to the war effort, is heard as an emotional response, rather than a brazen expression of patriotic fervour. For the most part Schuman's Americanism is internalised, rather than worn on his sleeve through reference to folk materials and well known melodies associated with the American experience.[28] More apparent is a concern on Schuman's part for clarity of expression and comprehensibility. Nathan Broder (1945, p. 17) illustrates the point with

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[28] A more overt Americanism is occasionally allowed to shine through, as in the case of the popular *New England Triptych* (1956) based on melodies by William Billings, or the 1963 orchestration of Ives's *Variations on "America"*. The titles of later works, such as the Tenth Symphony "American Muse" (1975), or *American Hymn* (1980), also invoke a degree of patriotism, but Schuman's music has, by this stage, established its own "American" credentials without reference to external sources. Schuman's choral music also invokes a degree of Americanism by association in his choice of texts (for example, Whitman, Taggard, Thayer).

the following account of a conversation between Schuman and two ladies on a train.

> One of them plucked up enough courage to ask, "Why is it that you modern composers never write a melody?" Schuman replied, "My music is all melody. Can you sing 'The Star Spangled Banner'? Then I guarantee to teach you to sing the principal melody of my symphony in half an hour".

A less sympathetic response was reserved for a conductor bemoaning the absence of melody in Schuman's music: "It is all melody. If you can't sing my music it is because you can't sing" (cited in Schreiber and Persichetti 1954, p. 51). Although the provenance of such stories is questionable, they serve to highlight the melodic orientation of Schuman's music and, more particularly, a degree of tension between an evident concern for communication between composer and audience on the one hand, and a desire for artistic credibility on the other. Referring to the historicist mainstream in general, Burkholder (1983, p. 120) finds that,

> in appealing to the past for inspiration and the future for acceptance, they ignored the goal which the composers they sought to emulate had kept uppermost in their minds: creating music which had current value for an audience in the present and fulfilled a social role above and beyond its value as art. In taking this step, Brahms, Franck, Schoenberg, and their followers developed a uniquely esoteric tradition associated with modernist "classical" music. Communication with an audience became secondary as the ideal of creating music of lasting value became paramount.

While Schoenberg pursued his (for the most part) uncompromising modernist agenda, many American composers in the 1930s and 40s found themselves treading a fine line between demands for music of socio-political relevance and their desire to create music that was both individual and forward looking.[29] For some, recognition of

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[29] Schuman's withdrawal of the Second Symphony that provided his initial breakthrough is perhaps significant here. The response of both public and critics was, for the most part, "violently negative" (Rouse 1980, p. 9), and may have been instrumental in Schuman abandoning some of the more experimental features heard in it. Rouse describes a trumpet C (one octave above middle C) held for almost the entire length of the first movement. "WS called it his 'Tibetan trumpet' and this gesture

the vibrant culture of American popular music, and varying degrees of reference to it, provided both socio-political relevance and a certain distinction from their European predecessors and contemporaries, if not their American counterparts. Schuman has commented upon the prominent position of popular music in his early years. Asked by Dufallo (1989, p. 387) about the possible influence of his early dance band experience on his later compositional thinking he replied

> Not the dance band so much as the fact that I was brought up on popular music. It made American speech a very natural source of musical expression for me; and I think the melodic turns of my music are based very much on American speech patterns. (I was nineteen before I heard serious music for the first time.) For example, in the String Symphony, the last movement certainly affects that idea...(singing) Ba-da Ba-da bum/ta-*Dee*-dum/ta-*Dee*-dum/ba-da-da-*Bee*-da bum...I suppose they're really jazz figures. They are difficult figures, but I think they stem from jazz in some way.[30]

The jazz influence is not confined simply to rhythmic figuration. Copland's reference (above) to the "golden sheen" characteristic of the timbral quality of American orchestras draws comparison with the superbly drilled swing bands of the 1940s.[31] It is in Schuman's music with its disposition of separate instrumental choirs and its precise

represents a certain kind of experimental stance not normally associated with Schuman" (personal correspondence, November 23, 1997).

[30] In a well known article written prior to his work with Schuman, Roy Harris had attempted to define the characteristic qualities of the American rhythmic sense in the following terms

> Our sense of rhythm is less symmetrical than the European rhythmic sense. European musicians are trained to think of rhythm in its largest common denominator, while we are born with a feeling for its smallest units. That is why the jazz boys, chained to an unimaginative commercial routine which serves only to crystallize symmetrical dance rhythms, are continually breaking out into superimposed rhythmic variations which were not written in the music. This asymmetrical balancing of rhythmic phrases is in our blood [...]. We do not employ unconventional rhythms as a sophisticated gesture; we cannot avoid them [...]. The rhythms come to us first as musical phraseology, and then we struggle to define them on paper (in Cowell 1933, p. 151).

Cf. Schuman's comment on the difficulty of notating jazz inspired rhythms in (Ramey 1980, p. 20), and, in a similar vein Schuman's response to the question of jazz influence in *Judith*, "That's no influence - that's jazz" (Reported in Schreiber and Persichetti 1954, p. 68n).

[31] From its legendary initial success at the Palomar Ballroom in 1935 to the mid 1940s (and beyond) the Benny Goodman Orchestra personified the polished ensemble that was a hallmark of the Swing era. In this respect, Gunther Schuller's (1989, pp. 9-10) comparison of bands headed by Goodman and Fletcher Henderson echoes Copland's characterisation of the American Orchestra: "To be sure, the element of technical perfection and polish, which Goodman insisted on and got from his players, added a surface sheen that the same arrangement may not have had with Henderson."

hocket-like brass figurations requiring the most disciplined ensemble playing that such comparisons are most apt.[32]

While the significance of jazz and popular influences is not to be denied (there will be a number of examples illustrated in the following analyses), the essence of Schuman's approach is firmly grounded in the Grand Tradition and it is this fact that bears most directly upon the analytical approaches adopted during the course of this study. Schuman's response to a question concerning the "new romanticism" of the 1980s neatly captures his position: "What amuses me is all this talk of a romantic-music renaissance, especially when I think of myself, Samuel Barber and some other of my contemporaries. Because that's all we've ever been - romantics" (in Ramey 1980, p. 21). In the very act of composing symphonies Schuman takes up the challenge, establishing a firm link with the gestures and manners of works inextricably bound up in the workings of functional tonality, while at the same time attempting to invest the form with a new post-tonal dynamic. It is Schuman's changing response to this challenge over a period of thirty years (his "idiosyncratic elements of expression") that underlies the present study. The implications of this historicist orientation in the search for an appropriate analytical strategy are investigated further in Chapter 2.

[32] See, for example *Judith*, bb. 156-167.

CHAPTER 2

ANALYTICAL ISSUES

The analytical methodology described below, and elsewhere in this study, may be seen to emerge in response to fundamental questions posed by Schuman's music. At the level of "musical listening", in the sense described by Nicholas Cook (1990, pp. 152-60), Schuman's best music 'works', establishing a distinctive and coherent sound world and engaging the listener; there is a sense, noted by Druckman,[1] of the music "knowing exactly where it [is going]." Schuman's 'instinctive' approach admitted no compositional systems and revoked (for the most part) traditional functional tonality as an integrative force,[2] and yet the core of his output is predicated on the most traditional, expansive and 'formal' of instrumental genres, the symphony. For the analyst the desire to probe for a greater understanding of such an instinctive musical language, to indulge in "musicological listening" (Cook 1990), is irresistible.

While wishing to place Schuman's music to the fore, issues of methodology and theory, both in terms of the techniques most appropriate to the music in question and the nature and characteristics of the analytical tools themselves, must also be addressed. This is particularly the case when aspects of the methodology are relatively new and untested. Such considerations are the subject of this chapter.

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[1] See Introduction p. 2.

[2] Schuman's views on these topics are cited in the following discussion.

Schuman's musical language

A concern for a more 'critical' approach to analysis, not least in terms of the proper placement of musical works in their cultural and social context, has been a crucial tenet of musicology in recent years, and the implications for the analyst of this apparent shift of focus have been much discussed.[3] As the dust thrown up by the 'New Musicology' settles it is clear that an understanding of Schuman's music is crucially determined by its historicist orientation, as described in the previous chapter, and further reflected in Schuman's own accounts of his approach to composition. In addition, the social and political climate of Schuman's milieu cannot be divorced from the analytical consideration of his music. Indeed, in the case of such an avowedly instinctive composer, wider issues than the purely musical are never far below the surface.

In invoking the rhetoric of the nineteenth-century symphony, Schuman's music invites a particular type of learned response, drawing upon a synthesis of experience and expectation, one aspect of which is a concern for the manipulation of pitch as a primary means of organisation. While the central analytical techniques described below have their origins in music far removed from Schuman's, they offer a means of probing beyond the surface rhetoric to reveal the organisation of pitch materials by which the symphonic 'image' is projected. The listener/analyst's historically informed response is unavoidable, indeed desirable, as a point of departure, providing a crucial morphological toe hold to be advanced through the analytical process. As the introduction to a recent collection of essays (Hatch and Bernstein 1993, p. 5) suggests,

> in making the choice [of method], an analyst could do worse than canvass the methods that would be congenial to the underlying musical mentality of a work's composer and to that of his intended audience. The chances are strong

[3] By way of an introduction to some of the issues, see, Kerman (1980), Whittall (1986-87 and 1993), Puffett (1994), Kramer (1995), Cook (1990 and 1998) and van den Toorn (1995).

> that in any given time and place the natures of thinking *in* music and thinking *about* music will correspond in many respects

The 'morphological toe hold' is described in the following brief account of Schuman's music in terms of its harmonic and melodic vocabulary, and the structural principles projected. It is designed to provide a framework or context for the ensuing discussion of analytical methodology.

An underlying theme running through the study is the changing nature of Schuman's musical language in terms both of its surface vocabulary and more fundamental aspects of form. However, it should be stressed that the stylistic 'evolution' charted here is not viewed in terms of 'progress' towards a more perfect compositional mode of expression. (In this sense the biological analogy is quite appropriate, many life forms long since extinct having been perfectly adapted to their environment.) The changes evident in Schuman's approach are seen rather as a logical outcome of his engagement with the musical materials and the formal challenges of the symphony in the mid-twentieth century.

While much of the writing on Schuman's music is either of a rather general nature, or predates many of the more recent theoretical advances in the study of post-tonal music, a number of earlier commentators provide valuable insights and observations. Also of crucial importance are the views of Schuman himself. Although he had relatively little to say about his own music in a technical sense, the few accounts that are to be found are remarkably consistent in terms of the issues raised and the views offered. Schuman's observations on style changes in his work (in Dufallo 1989, p. 386), for example, reflect his composerly lack of interest in analysis, but they also portray a continuity of approach that will be reflected in the analyses to follow:[4]

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[4] One aspect of this continuity (discussed below) is the role of the triad in Schuman's ouevre.

> Well, you know the wonderful thing is that I can't analyze my own music, and I don't try [...] I don't like to talk about my own music in that sense. It's all of a piece as far as I can see; but obviously, I'm sufficiently objective to know that harmonic language changes and develops over the years; lots of things change, we change. But I wouldn't know how to be more introspective than that about it.

A recurrent theme in Schuman's accounts of his music is the importance of melody (recall the anecdotes of the previous chapter). It is melody that provides the music's driving force, with accompanying textures often giving the appearance of a harmonic backdrop against which the melodic discourse is played out. In conversation with Ramey (1980, p. 17), Schuman describes the process as follows: "I often work with a melody, because I like to write long lines. I'll put down a melody and at times have no idea how to ultimately treat it - whether it will be contrapuntal, harmonised, or have an accompaniment."[5] While for Persichetti (Schreiber and Persichetti 1954, p. 51),

> Each idea pivots on the melodic. The rhythmic structure is implied in the thematic outlines and the harmonies are suggested by the characteristic melodic skips and general textural feeling. Even form ideas are generated by the physical needs and implications of the primary melody.

Persichetti's reference to the "implications of the primary melody" is particularly prescient of the discussion of autogenetic development and form below. What is conspicuously absent from the outset (at least in the major instrumental works) is functional tonality as a background structural force. Nathan Broder (1945, p. 19) points out that,

> [a]s with most of the outstanding composers of this century, harmony is not, as a rule, a structural element in Schuman's large forms; that is to say, he does not normally employ key relationships as a means of binding large sections together.

[5] For similar accounts see, Broder (1945, p. 17), Keats (1974, p. 76) and Saylor (1986, p. 167)

This is not to deny the structural significance of particular pitches or collections in many of Schuman's works, or the presence of localised tonal allusion. Quartal and scalic diatonic formations form the basic materials of Schuman's early music, with areas of harmonic stability often forming referential 'pillars', particularly as a means of closure. Similarly, the music may include specific allusions to traditional cadential patterns, but these are often secondary, or complementary, to the contextual (as opposed to Schenkerian) 'background' of the particular movement.[6] As noted in the previous chapter, certain works from Schuman's so-called 'rhetorical' period (the 1950s and early 1960s) also employ 'resolutions' on emphatic closing triadic sonorities, imposed rather than resulting from any deeper structural harmonic function. Schuman's response to a question regarding the presence of sonata form and its associated tonal schemes in his symphonies (in Clark 1982, p. 238) is telling here, confirming the process of assertion rather than tonal function:[7]

> [There are] Absolutely none. When I write I have no idea of a tonal scheme; people are always telling me, ah this entered that way, but I have absolutely no idea of a tonal scheme. It's all instinctive. I mean I know what I'm doing while I'm doing it, but I don't ever think of it as a tonal scheme. I think of where that particular section is going. I don't think in terms of a tonal scheme because I can make a convincing ending at any place in the chromatic scale and it doesn't matter where I began.

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[6] The potential for confusion inherent in the term "contextual" is highlighted by Maus (1999, p. 191, n. 52). As used here it refers to the interpretation of particular events (musical gestures, sonorities etc.) in relation to other events (the "context") within the bounds of a single work. In this specific sense an event is seen to derive its meaning from its relation to other events within a closed system. This is in contrast to more universal relations, such as those operative in functional tonality, for example. Cf. Agawu (1989) cited on p.45.

[7] Interviewed by McKinley (1977, p. 336), Schuman gives similarly short shrift to the presence of "tonal foci" in the Ninth Symphony. "He denied any tonality, even tonal foci in Symphony No.9. This researcher observed that, by various means - duration, reiteration, dynamics, changes in tessitura, to mention a few - certain tones were designated as tonal foci. He remarked that even when so perceived, these foci were not intended." Cf. Clark (1982, p. 107) whose demonstration of "the traditional source of much of Schuman's harmonic thinking" in a brief extract from the Sixth Symphony (bb. 112-18) is both tentative and extremely selective. The "root progression" revealed is shown to feature "several dominant, subdominant and mediant relationships. However, the root of the chord is *never* in the bass; instead the bass is usually a seventh or a ninth which obscures the root progression and creates harmonic instability" [his emphasis]. A more viable (and consistent) explanation for the chord choice in this passage lies in the nature of the chords themselves (see Chapter 7). McKinley's (1977) accounts of "tonal foci" in the Ninth Symphony are similarly undermined by ill-defined terms and inconsistencies in the criteria employed in their selection.

In the absence of functional tonality, a consistent feature encountered throughout Schuman's oeuvre is that of complement relations between pitch materials. In the very broadest sense this refers to a contextually defined sonic identity and the association of events, either in terms of pitch or pitch-class identity or, more generally, by virtue of intervallic association. It is the inherent tension between identity and 'otherness', reinforced in other musical domains (notably rhythm and timbre), that informs the oppositionally based, and historically determined, rhetoric of the symphonic discourse. Each work seeks to establish anew the priority of a particular sonority or sonorities. In many early works diatonic and extended diatonic collections act as a frame of reference in this regard, with both triadic and quartally based vertical sonorities heard as 'consonant', or in some cases 'dissonant' (see Ex. 2.1a below). This impression of contextually determined identity can be sensed in the continuation of Broder's (1945, p. 19) account of Schuman's harmonic practice:

> [H]is harmony is not, [...] a mere haphazard result of the combination of melodic lines. Instead the counterpoint is carefully planned, not to proceed from one harmony to another, as in older music, but to result in a definite kind of harmonic texture, which is maintained consistently for the length of the passage in question.

The quotation marks around the term 'consonant' above (and by implication the associated terms 'dissonance' and 'resolution') indicate a specific, metaphorical, usage divorced from the usual association with ideas of prolongation and the hierarchy of traditional tonal function. Joseph Straus (1987a) argues forcefully against the dilution of the Schenkerian model of prolongation and the associated hierarchy of structural levels, and no such dilution is proposed here. For the most part, and particularly in the case of the works examined in detail in this study, Schuman's music does not prolong sonorities

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Symphony are similarly undermined by ill-defined terms and inconsistencies in the criteria employed in their selection.

by means of an integrated system of voice leading and diminutions familiar from the analysis of tonal music. What is being proposed is a more modest distinction between contextually reinforced sonorities heard as pre-eminent during a particular passage, and alien formations (in that they express pitch and/or interval content different from the established norm) that are juxtaposed to create a localised 'surface tension'. While Straus makes a valuable distinction, "between centricity and prolongation" (p. 6), pointing out that "mere departure and return do not constitute prolongation", the use of the terms 'consonant' and 'resolution' in this very specific, associative sense does not seem unreasonable. Perhaps a closer model would be that proposed by Paul Wilson (1984, p. 88) in his discussion of Bartók's Opus 20 where "[i]n the harmonic connections [...], the basic structural model is the establishment of a primary chord, a departure from that chord, and a return to it as a fitting final gesture." The concept of structural levels is still useful here, in that the priority of particular sonorities may be viewed on a bar by bar, section by section, or movement by movement basis.

That these contextually defined distinctions between 'consonance' and 'dissonance', or tension and release, are underpinned by the rhetoric, the well established gestures and conventions, of the Grand Tradition is made clear in the following examples from two very different works. In each the domains of rhythm, metre, texture and dynamics serve to establish hierarchic relationships between sonorities in a manner familiar from traditional tonal music. Ex. 2.1 cites examples of such relationships in Schuman's earliest published instrumental work, the Second String Quartet (1937). Ex. 2.1a illustrates the climax of the first movement where contrary motion scale figures break off abruptly to 'cadence' on a distinctive 'triad plus added note' tetrachord [Cb, C, Eb, G]. What follows is a sequence of six 'triad based' sonorities of four and five pitch-classes delineating a clear distinction between the 'diatonic' (subsets of the seven-note diatonic collection) and 'chromatic' (sonorities falling outside the diatonic collection) realms. The dichotomy is articulated by virtue of the emphasis afforded the 'chromatic' sonorities that frame this passage. The priority of the chromatic tetrachord in b. 65 is clear, with the return to the chromatic pentachord in b. 70 marked by the anticipatory rest and the duration of the 'goal' sonority. This example is entirely typical of the way in which Schuman affords priority to "a definite kind of harmonic texture", forming associative connections within a particular work.

The conclusion of the second movement (Ex. 2.1b) provides a second example of associative relationships central to the model of "establishment, departure and return" outlined by Wilson (above). In this instance, a 'fourths' chord [C, D, G] is established in b. 121 (as the 'goal' of the preceding crescendo), compromised in bb. 122-23, and then reasserted (in the form of the dyad [G, D]) in the final bar. The intervening viola melody (bb. 122-23) emerges from the sustained dyad [G, D] which is itself then undermined by the successive pitches Bb (violin 1) and Ab (violin 2). The inherent tension generated by the gradual dissolution of the prevailing quartal context is then 'resolved' with the return of the 'fourths' dyad [G, D] in the final bar. This basic model of departure and return underpins Schuman's musical language and affords many opportunities (as here) for allusive reference to historicist models of voice leading.[8]

The same cadential principle of identity and non-identity underpins the succession of three chords that open the finale (Ex. 2.1c), where, once again, diatonic (chords 'a' [C, D, F, G, A, Bb] and 'c' [B, C, D, E, G]) and chromatic (chord 'b' [F#, G, A, C, C#, D]) conflict. In each of these examples the rhetoric of the Grand Tradition plays a crucial part in the articulation of local, contextually defined relationships. The

[8] Most notably in this instance the auxiliary note motion G - Ab - G in violin 2 played out against the sustained low G in the 'cello. (Such inflections are investigated further in Chapter 5).

attribution of meaning to these relationships is dependant upon a complex network of factors that define the localised context of the individual work.[9]

Kofi Agawu (1989, pp. 147-49) makes a useful distinction between what he terms "acoustic" and "aesthetic" consonance:

> I use the term "acoustic consonance" to describe consonance determined by explicitly stated physical criteria - put forward by various theorists including Helmholtz, Stumpf, and Hindemith - and "aesthetic consonance" to denote the often arbitrary adoption of a particular physical sound as "consonant" by the force of its compositional use.

Two examples from the Ninth Symphony (1968), cited by Clark (1982, p. 102-03), provide further, persuasive, illustrations of the importance of rhetorical gesture in articulating contextually defined hierarchies. In the first example Clark notes that a "series of dense, mid-range clusters for brass [...] resolves directly to a perfect interval chord built on c sharp", while in the second a similar "cluster [...] receives an unexpected resolution to bare octaves on 'F'." What Clark does not consider is the role played by rhythm, metre and dynamics in creating this effect. In Ex. 2.2a the sustained chord (containing all twelve pitch classes) is invested with a dynamic tension (*fff* - *p sub.* - *cresc.*) before resolving onto the open fifth [C# - G#] marked by articulation (staccato, accent) and rhythm (iambic), while in Ex. 2.2b a chord of eleven pitch classes (missing only C#/Db) resolves by similar means onto reiterated F naturals. Interestingly, in spite of a quasi-serial circulation of the total chromatic in this work (see Chapter 8), from the perspective of pitch the effect of cadence is produced not by literal complementation, but, as Clark (p. 103) suggests, through "release of tension through perfect interval structures." Of equal importance, however, are the non-pitch factors, the 'rhetoric' of formal articulation.

[9] The fact the distinctions outlined in these examples are to some extent universal (the distinction between 'diatonic' and 'chromatic') should not detract from the principle of identity and non-identity and its means of projection, which will be seen to underpin more 'abstract' distinctions in later works.

On the surface it is the changing vocabulary of referential sonorities, graphically illustrated in the previous examples, that marks the stylistic evolution of Schuman's oeuvre. A fascinating aspect of this process is the changing role of the triad in Schuman's harmonic vocabulary. In an early work such as the Third Symphony (1941) the triad is frequently established as a harmonic 'norm', but it remains as a common factor in later works also, notably the pivotal Symphony no.6 (1948) where the central diatonic/chromatic harmonic duality is expressed in terms of two 'triad plus added note' tetrachords. The final transition to a contextual opposition devoid of triadic association is achieved in the Ninth Symphony (1968), expressed in the form of two symmetrical tetrachords. The triad can thus be seen to mediate between the two extremes of Schuman's stylistic compass (Fig.2.1).

Fig. 2.1 Changing role of the triad

Triad (Symphony 3)		[0, 3, 7]	
Triad plus added-note tetrachords (Symphony 6)	[0, 2, 3, 7]		[0, 3, 4, 7]
Symmetrical tetrachords (Symphony 9)	[0, 1, 3, 4]		[0, 1, 4, 5]

Concomitant with this changing sonoric vocabulary is a more fundamental shift from (to borrow Dahlhaus's terms) a static "architectural" view of form to a more "dynamic" interaction of the materials through which the symphonic discourse is played out.[10] The earlier "architectural" approach manifests itself most obviously in the form of

[10] Although the context of Dahlhaus's (1980, p. 69) discussion is very different (Wagner's "wandering" tonality and "the weaving of an ever denser network of motivic relationships" in contrast to the "expanded" tonality of Brahms) the principles involved are remarkably similar. According to Dahlhaus,

such neo-baroque devices as the passacaglia, fugue and variations.[11] Cohesion is achieved through tightly worked thematic associations between movements (as in the case of the Third Symphony), while variety within essentially static and repetitive structures is provided through often ingenious thematic transformations in the nineteenth century sense. While many of these characteristics are never entirely lost in later works, the 'dynamic' approach to form embraces a much more fluid view of the development process whereby thematic materials, and ultimately the form of the work, are seen in terms of the realisation of the potential inherent in an initial idea.

From a historical standpoint these apparently opposing views of musical form reflect a well established dichotomy between two schools of thought very much 'in the air' during Schuman's early career. The neo-classical orientation of the early works clearly owes something to the influence of Stravinsky. As Schuman pointed out to Dufallo (1989, p. 383) "I was very enthusiastic about Stravinsky, as most people at that age were. It was either Stravinsky or Schoenberg [...] kind of like Brahms and Wagner. It seems so ridiculous in retrospect." Conversely, the later, more 'organic' approach to form and the development of materials appears to have its roots in a distinctly Schoenbergian world, reflecting the concepts of the musical 'Idea' and the process of 'developing variation'. This lineage might appear to be confirmed by the quasi-serial circulation of the total chromatic found in the Ninth Symphony marking the culmination of this trend in Schuman's work. In reality, according to Rouse, "[Schuman] neither admired Schoenberg the composer nor Schoenberg the theorist, believing his approach to be counterproductive to composing *musically*. Ditto for Webern, though he felt more

Wagner's vision of form sees "the complementarity of differentiation and correspondence [as opposed to tonal centrality], express an idea of form that strives for complete and absolute integration - not the integration that comes as a matter of course from following a plan prepared in advance, but integration that must be won, often by force, from recalcitrant material."

[11] In addition to the Third Symphony, examples include, the String Quartet No. 2 (1937): I. Sinfonia, II. Passacaglia, III. Fugue, and the String Quartet No. 3 (1939): I. Introduction and Fugue, II. Intermezzo, III. Rondo - Variations.

kindly towards Berg."[12] In fact, as noted previously, the source of the 'dynamic' in Schuman's later work is to be found elsewhere, specifically in the concept of 'autogenetic' development described by Roy Harris. However, not only will Schoenberg's thinking on these issues prove to be particularly valuable in the analysis of Schuman's development techniques, it will also serve to highlight common threads of musical thought between composers widely differentiated in terms of their musical style. Ultimately, the common denominator here is the desire of all three composers to build upon, and maintain clear association with, the achievements of the past.

This extremely generalised account of the characteristics of Schuman's music reveals a lexicon of analytical issues relating to a broad band of mid-twentieth century composers. An ideal analytical methodology would be one that embraced all aspects of the picture presented here, but in the absence of an analytical 'theory of everything' the stylistic range encompassed by Schuman's oeuvre will be reflected by a variety of analytical techniques invoked during the course of this study. Theoretical issues arguably less in need of lengthy analytical exposition will be dealt with in the context of the analysis of particular works (for example, the treatment of extended diatonicism by theorists in relation to the work of Stravinsky and Bartók is examined in the context of Schuman's Third Symphony in Chapters 3 and 4). The remainder of this chapter is devoted to an examination of issues surrounding the analytical technique that forms a central thread throughout this study: pitch-class set and genera theory.

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[12] Personal correspondence (November 23, 1997). [Emphasis Rouse].

Pitch-class sets and genera theory

A defining feature of Schuman's development as a composer is an apparently increasing 'set consciousness' most notable (perhaps unsurprisingly) in the later, less diatonically orientated works.[13] For example, in exploring an intriguing sound world encompassing both triadic tonal allusion and contextually defined sonorities, the piano cycle *Voyage* (1953) presents a distinctive 'referential' hexachord (6-z43) in a number of guises (Ex. 2.3). The closing bars of the first piece "Anticipation" (Ex. 2.3a), project a cadential passage that can be read both in terms of tonal allusion (coming to rest on an F major triad in b. 72) and as a series of sub- and supersets of the pitch-class set 6-z43. Only two of the vertical sets fall outside this categorisation: the chord formed by the 'cambiata' Eb (4-22) requires 'resolution' to the 6-z43 subset 3-11 (bb. 71-72), thus mimicking the parallel 'tonal' resolution at the same point. Similarly, the hexachord 6-z49 disrupts the 6-z43 subset status of 5-28 (b. 73) before the referential hexachord is heard unequivocally over the lingering low F in the final bar. The hexachord then appears in strikingly different manifestations (transpositions, register, contour and interval distribution, etc.) at the end of each subsequent piece in the cycle (Exs. 2.3b, c and e). The fourth piece "Decision" (Ex. 2.3d) develops further the concept of 'consonance' and 'dissonance' in relation to the referential hexachord, closing with alternating pentachords 5-20 and 5-21. Only 5-20 is a subset of 6-z43, leaving the final chord awaiting resolution with the onset of the final piece ("Retrospection") characterised by the most vivid and dramatic presentations of 6-z43 in the opening bars (Ex. 2.3e). Note in particular the avoidance of the pitch D^5 in the grace note conclusion to the trills, thus preserving the identity of the hexachord. Curiously, the work ends (Ex.

[13] Information regarding the useage of Pitch-class set terminology is located in the Preface.

2.3e, bb. 42-45) with a veiled reference to 6-z43 in its original form (see Ex. 2.3a), but coming to rest on the 6-z43 subset 5-z18 (once again over an F major triad).[14]

Voyage provides a vivid illustration of Schuman's concern for pc-class set identity and manipulation at this stage in his development as a composer. As will be demonstrated in the ensuing analyses, however, pitch-class set analysis provides powerful tools for the identification and association of sonorities across the whole spectrum of Schuman's work. The extent to which certain aspects of pitch-class set analysis (notably genera systems) provide viable models for different stages of Schuman's musical language is an important part of the empirical process presented here. Recent developments in generic pitch-class set theory provide a means for the analysis not only of patterns of association within individual works, but also for comparing the sonoric vocabulary of works written at different stages in a composer's career. Generic models may therefore provide valuable insights into the precise nature of the pitch structures that lie behind the formal rhetoric of Schuman's music.

Two rather different models of pc-set genera have emerged. That proposed by Allen Forte (1988b, pp. 187-88),

> offers an objective frame of reference for harmonic materials, one that is independent of any particular compositional practice, in the specific sense that none of the genera are derived empirically from actual music, but, true to the Pythagorean heritage, are constructed entirely on a logical basis from a few primitives.

The formation of Forte's genera will be outlined below, but the end result is a matrix of twelve genera against which the musical subject is compared. The model proposed by Richard Parks (1989) in his study of Debussy's music pre-dates that of Forte and, more importantly, differs in that it attempts to establish genera according to

[14] The triadic origins of many such referential sonorities is explored in the context of subsequent analyses.

the characteristics of the particular work under consideration. Both approaches have much to offer in the context of a study such as this.

In spite of the obvious potential inherent in generic theory, it must be acknowledged that since the publication of both Forte's and Parks's original studies there has been relatively little activity in this field. Forte has published two articles to date that invoke his system of generic relations. The first presents an examination of octatonic formations in the music of Debussy (Forte 1991). However, the system of genera is invoked only on a theoretical basis in order to demonstrate the intersection of octatonic pitch-class sets with harmonic areas (genera) other than the primary (octatonic) Genus 3 (ibid., pp. 130-33). At no stage are particular passages of Debussy's music passed through the generic matrix. Forte's second paper (1992a), on the music of Ives, is disappointing in that the presentation of the genera matrices contains a number of errors and inconsistencies.[15] In spite of Forte's (1991, p.161, n. 19) claim that "[a] major purpose of the system of genera is to permit close examination of large-scale harmonic vocabularies", the only major study to examine a significant body of work from a generic perspective, extant at the time of writing, is Chris Kennett's fine thesis (1995) on the music of Frank Bridge. Kennett provides a detailed study of Forte's system of genera and, crucially, the implications of the theory in practice.

The reasons behind this hiatus in genera studies perhaps have more to do with the prevailing academic climate into which these theories emerged than any inherent fault in the concept. As Craig Ayrey (1998a, p. 163) observes,

> the new formalism - which brought postgraduate courses in analysis and theory on this side of the Atlantic to maturity in the 1980s [...] - has been challenged by

[15] Forte (1992a, pp. 361-63) refers to several sets in the text of the article that do not appear in the genera matrices, additionally the full and reduced versions of the same matrix (Tables 2 and 3) are inconsistent with regard to set content. The text refers to "twenty-five set classes listed in the leftmost column [of the genera matrix]" where only 17 are present. The resultant Squo calculations do not tally with the given matrix.

> the divergent routes of 'new musicology': agendas have changed, interests shifted, and music is valued differently.

It was partly in response to this situation that a symposium devoted to pitch-class set genera was convened by Ayrey at the Cambridge University Music Analysis Conference in 1997. Contributions to that symposium by Ayrey (1998a and b), Doerksen (1998), Dunsby (1998), Forte (1998a and b), Kennett (1998a and b) and Parks (1998a and b) have since appeared in the July 1998 issue (17/ii) of *Music Analysis*. The following discussion of generic theory, will draw upon a number of important questions and issues raised in the symposium and elsewhere.

Forte's theory of pitch-class set genera

Formation of the genera

Forte establishes the theoretical grounding of his theory with typical rigour in his original paper (1988b). A valuable "condensation and distillation" of Forte's theory is provided by Kennett (1995, pp. 8-20); what is presented here is an outline of Forte's model designed to highlight particular issues and questions. (All references in this section are to Forte 1988b, unless otherwise stated).

Invoking "the intervallic content of pitch-class sets as the fundamental basis of the genera" (p. 188), Forte first compares the interval properties of trichords (seen to represent the smallest set cardinality that can be meaningfully compared in these terms). Comparing the interval vectors of the twelve trichords, two distinct categories emerge: those trichords in which two interval classes are uniquely represented (see Table 2.1 "Unique Interval-Class Representation"), and trichords sharing two (non-empty) interval-classes with another (see Table 2.2 "Interval-Class Congruent Trichords"). Added to these is the unique single interval-class trichord 3-12, the "augmented triad".

Table 2.1 Trichords with Unique Interval-Class Representation (from Forte's Table 3)

Unique Interval-Classes		Pitch-Class Set
1	6	3-5
2	6	3-8
3	6	3-10
4	6	3-8
5	6	3-5

Table 2.2 Interval-Class Congruent Trichords (from Forte's Table 2)

Shared Interval Classes	Pitch-Class Sets	
1 & 2	3-1	3-2
1 & 3	3-2	3-3
1 & 4	3-3	3-4
1 & 5	3-4	3-5
2 & 3	3-2	3-7
2 & 4	3-6	3-8
2 & 5	3-7	3-9
3 & 4	3-3	3-11
3 & 5	3-7	3-11
4 & 5	3-4	3-11

These "unique" and "paired" trichords form the progenitors for a network of inclusion relationships based upon the complementary Kh relationship. Forte's rules for genus formation are as follows (p. 192):

1. Each member of the genus as well as its complement must be a superset of (must contain) the progenitor(s).

2. In addition to satisfying Rule 1, each pentachord must contain at least one of the tetrachords in the genus and each hexachord must contain at least one of the pentachords and at least one of the tetrachords in the genus.

Constructed in this way, two of the trichordal pairs produce genera that are in turn subsets (subgenera) of other genera. The genus around 3-4 & 3-5 is a subgenus of that around 3-5, while that around 3-6 & 3-8 is a subgenus of that around 3-8 (p. 200). As a result the entire set "universe" is represented by twelve genera presented in Table 2.3 (below).[16] Included in this table are the number of sets of each cardinality (#3/# 4/# 5/#6) represented in each genus followed (in the rightmost column) by the total number of sets. The left hand column indicates the association of a number of the genera into four Supragenera "on the basis of intersection of their constituents - the extent to which they hold pitch-class sets in common" (p. 225). The precise nature of the intersection of genera within the supragenera is somewhat different for each case, and is set out by Forte (pp. 224-27).

To summarise, Genera 1, 2 and 3 are seen to intersect "to a remarkable degree with respect to hexachords": all the hexachords of Genus 3 are members of Genus 1, and all the hexachords of Genus 1 are also members of Genus 2. Hexachordal intersection also determines the members of Supragenus II (Genera 5 & 6), while for Genera 8, 9 & 10 (forming Supragenus III) it is the intersection of the tetrachord 4-19, in addition to ten pentachords common to all three genera and (with the exception of 6-9 common only to Genera 8 & 10) sixteen hexachords. Supragenus IV (comprising Genera 10 & 11) is formed on the basis of hexachordal intersection and, with the exception of 5-14, pentachordal intersection. An additional measure of genus similarity, predicated upon the extent of intersection between genera across all cardinalities is the

"Difference Quotient" (Difquo) that provides a ranking of genus similarity, and confirms the associations formed by the Supragenera (pp. 220-24).

Table 2.3 (from Forte's Table 10)[17]

	Genus	Type	Progenitor(s)	Counts (#3/#4/#5/#6)	
SUPRA I	>1	atonal	3-5	1/9/24/29	63
	>2	whole-tone	3-8	1/9/25/30	65
	>3	diminished	3-10	1/5/17/22	45
	4	augmented	3-12	1/2/8/10	21
SUPRA II	>5	chroma	3-1 & 3-2	2/2/10/15	29
	>6	semichroma	3-2 & 3-3	2/3/16/24	45
	7	chroma-dia	3-2 & 3-7	2/3/15/25	45
SUPRA III	>8	atonal	3-3 & 3-4	2/3/15/21	41
	>9	atonal-tonal	3-3 & 3-11	2/3/15/21	41
	>10	atonal-tonal	3-4 & 3-11	2/3/15/21	41
SUPRA IV	>11	dia	3-7 & 3-9	2/2/10/15	29
	>12	dia-tonal	3-7 & 3-11	2/3/16/24	45

16 As Forte (p. 200) acknowledges "[a]s one peculiar result of the latter subsumption [of the genus about 3-6 & 3-8], trichord 3-6 does not appear among the trichords on Table 10". When encountered, 3-6 is assumed to be a member of Genus 2.

17 This table follows Ayrey (1998a, p. 176) in including 4 sets inadvertently omitted from Forte's original list.

The set content of the work, or passage, under consideration is projected onto the matrix of the twelve genera, with many sets assigned to more than one genus. The "hegemony" of a particular genus is then determined, taking account not only of the extent to which each genus is engaged by the matrix, but also the disproportionate generative power of different genera. A large genus of sixty-five sets is thus more likely to engage with a high proportion of sets within a matrix than is a small genus of twenty-nine sets. This statistical imbalance is addressed by invoking a simple calculation expressed as follows (p. 232):

$$\text{Squo (Ga)} = ((X/Y)/Z) \cdot 10$$

Where "[t]he variable X is the number of representatives of Genus a (Ga) in the matrix; Y is the total set count for the matrix (all genera), and Z is the total size of Ga". The resulting value (termed the "Status Quotient" or "Squo") determines the genus that engages most strongly with the matrix, taking into account constraints of relative genus and matrix size. The genus with the highest Squo is then regarded as ascendant and the sets are redistributed across a second, reduced, matrix according to the Squo hierarchy. Forte establishes five rules to govern the redistribution of sets. For reference they are cited below (pp. 234-35):

> 1. *Rule of greatest status quotient* determines the genus with primary role, unless the representatives of that genus are a proper subset of a genus with a greater Squo, in which case Rule 2 takes effect. If more than one genus enjoys a particular Squo, Rule 1 associates the relevant pitch-class set with it (them) as well, unless there is a third candidate genus which has been invoked by Rule 4, the Rule of Singleton Extension, in which case the latter genus receives the pitch-class set.
>
> 2. The *Rule of Intersection* omits genera [from the reduced matrix] which are proper subsets of other genera with higher Squos.

3. The *Rule of Completion* completes the genera matrix in case the genus with the highest "operational" Squo (if Rule 2 has been placed in effect) does not account for every set, by invoking the genus with the next highest Squo to provide a setting for the vagrant pitch-class set(s).

4. The *Rule of Singleton Extension* causes pitch class sets which are attached to only one genus ("singletons") to engage that genus in its entirety. Genera so engaged may incorporate other pitch-class sets not yet situated in the matrix by Rules 1 or 3. Rules 1 and 3 apply if more than one genus is a candidate.

5. The *Rule of Reduction* omits genera, "passive genera" which do not contribute to the generic profile of the composition, as determined by Rules 1, 3, and 4, and produces the reduced matrix representations [...] in which each pitch-class set in the matrix is assigned to only one genus.

Application and Interpretation

Having established the bare bones of Forte's theory, it remains to raise a number of questions relating most particularly to its manner of application and interpretation in the context of actual analyses. It is only on the basis of a clear understanding of the characteristics and peculiarities of the genera themselves that meaningful analytical conclusions may be drawn. A number of the questions raised here are best considered in relation to specific examples. As a result they are discussed most fully in the context of the later analyses. Other questions arise from the theoretical basis upon which the genera are constructed and are considered below.

Perhaps the most pressing questions relate to the interpretation of genera matrices, and in particular the process of reduction whereby a hierarchy of generic association is established. Questions relating to the statistical imbalance between genera of different sizes are raised, most directly in his contribution to 1997 Cambridge University Music Analysis Conference, by Kennett (1998b). Kennett draws particular attention to the influence of matrix size (the number of sets invoked by the analysis) upon the performance of larger or smaller genera. These issues are considered in detail in Chapter 4. Similarly, Forte's "Rules for the Interpretation of Generic Relations" (cited above) are themselves subject to interpretation, a point acknowledged by Forte (p.

252). Chapter 4 again provides an opportunity to consider these questions in the context of specific examples.

Related to these questions are more theoretical issues concerning sets that are members of more than one genus and the relative strength of such allegiances. Are all sets equally characteristic of a given genus? While the genera are constructed on the basis of chains of Kh relationships the genera concept does represent something of a relaxation of Forte's original concept of the "subcomplex Kh" (Forte 1973, pp. 96-100). As Kennett (1995, pp. 169-70) points out, the Kh relationship can always be traced from trichord progenitor(s) to tetrachord to pentachord to hexachord, but as the generic tree fans out the Kh relationship does not necessarily pertain between all members of the genus. By way of illustration, Fig. 2.2 (vol. II) illustrates the Kh lineage between the members of the smallest genus (Genus 4). For the sake of clarity the Kh relationship between the progenitor 3-12 and all the other sets in the genus is not illustrated. The point being made here rests not upon the sets joined, but upon those not so joined. It is possible for two sets to be linked by the rather tenuous 'k' relationship only, or even to enjoy no inclusion relationship of any kind. The tetrachord 4-19, for example, is in the relationship Kh to the pentachords 5-13, 5-17, 5-21, 5-22, 5-26, 5-30 and 5-37 but only in the relationship k to 5-33 (that is to say, it is a subset not of the 5-33, but of 5-33's complement 7-33). The set 5-21, meanwhile, enjoys Kh 'linkage' to six of the ten hexachords, whereas 5-22 is so linked to only one. The hexachords 6-20 and 6-35 are each 'Kh' (the only inclusion relationship open to 'non-z' hexachords) to only one pentachord and one tetrachord whereas 6-15, 6-16, 6-21, 6-22, 6-31 and 6-34 appear to be more tightly integrated, enjoying Kh linkage with both tetrachords and three pentachords. The paucity of relations enjoyed by the whole-tone 6-35 confirms the intuitive feeling that its real 'home' lies elsewhere (in this case Genus 2, the only genus to contain all three tetrachordal subsets of 6-35: 4-21, 4-24 and 4-25). Forte discusses this issue in relation to the construction of Genus 5, noting that,

> [i]n Genus 5 as in the other genera, we find sets that are somewhat loosely affiliated with the genus - in this case, 6-5, 6-14, 6-15, and 6-16 have only three entries [Kh relationships with other genus members] each. This means that their primary associations are with other genera. In this context they enjoy only "shirttail" status (p. 196).

A further, related difficulty anticipated by Forte concerns the distribution of particular sets across the genera matrix as a whole. This is a significant factor to be accounted for in determining the relative 'weight' attached to a set in a given context. This is most clearly illustrated in terms of the contrast between hexachordal and tetrachordal membership:

> No hexachord belongs to every genus, but six hexachords belong to every genus but one [...] Again we can foresee an analytical problem here: if one of these gregarious hexachords turns up in a composition it is very apt to belong to every genus represented, which, once more implies that strategies of interpretation will have to be developed in order to ensure a meaningful reading of generic organisation (p. 209).

One such strategy would be, of course, to take account of the affiliate status ("shirttail" or otherwise) of the set in question. The problem posed by tetrachords lies in the opposite direction:

> Seventeen of the twenty-nine tetrachords, a considerable majority, have singular generic associations. As might be expected, this exclusiveness is apt to have a significant impact upon procedures of analytical interpretation [...] since, if several tetrachords are operative in a particular work, it is likely that some of them will be of the singular type and thus skew an analysis in which a genus or genera unrelated to them are, in fact, principal contributors to the music under consideration (p. 204).

These interpretative difficulties are addressed further in relation to specific examples (see Chapters 4, 7 and 8). A factor not considered in Forte's original (1988b) presentation (and given fairly short shrift elsewhere, see Forte 1998a, p. 229-30) is that of saliency, the degree to which a set appears as a prominent feature in the music under analysis.[18] This question, and the related issue of segmentation are both discussed further below.

Parks's theory of pitch-class set genera

In many ways Richard Parks approaches the concept of pitch-class set genera from the opposite direction to Forte. For Parks the construction of a genus, or genera, is an empirical process, begun anew in an attempt to create the best possible theoretical model of the individual work or passage examined. The genus invoked comprises the network of inclusion relationships (subsets or supersets, but without the (Kh) requirement for complement inclusion) about a chosen progenitor (cynosural set class) or progenitors that best mirrors the musical object.[19] The progenitor(s) invoked may be of any cardinality (in contrast to Forte's exclusively trichordal progenitors). While Parks's genera system emerges empirically during the course of his original study (1989), a more abstract theoretical presentation is to be found in Parks (1998a). What

[18] One reason for this apparent lack of concern may lie in the nature of the music to which the majority of Forte's attention has been directed. As he points out "the issue of salience in atonal music might be something different from salience in tonal music" (1998a, p. 230). The concision and high degree of organisation associated with much of the work of the Second Vienna School tends to mitigate the problem.

[19] A similar inclusional 'halfway house' between the Forte's k and Kh relationship is proposed, in a modified form, by Larry Soloman (1982, pp. 72-73), establishing, "a level of significance for subsets [whereby a] significant subset [...] is defined as one whose cardinality is greater than half that of the superset, a more selective relation than the subset concept [k] in SAM [Forte 1973] but less selective than the complex Kh." For a typically rigorous presentation of the theoretical basis for such inclusion based relationships, see Morris (1997).

follows is a digest of that presentation (unless otherwise stated, all page references are to Parks (1998a)). Parks identifies two genus types (p. 207):

> 1. A *simple genus* is a collections of scs [set classes] related to a single cynosural sc [set class] by inclusion, as either subsets or supersets of that sc. [...]
>
> 2. A *complex genus* is a collection of scs that are related to two or more cynosural scs by inclusion, either as subsets or supersets of those cynosures. In other words, the complex genus comprises the *union* of the simple genera for each of its cynosural scs. [...]

Within a complex genus Parks distinguishes between set classes that are related by inclusion to both (or all) cynosures (termed "primary members of a complex genus") and those that are so related to only one (or not all) cynosures ("secondary members of a complex genus"). Genus membership of both simple and complex genera is further extended to "those scs that are Z-related to scs which are members of that genus, but which are not themselves subsets or supersets of the cynosural sc", (termed "ancillary members").

In addition to establishing the qualities that determine genus membership, Parks (p. 209) is also concerned to distinguish between those sets that evince the essential characteristics of a genus (in terms of shared intervallic properties, and a central position within the network of inclusion relationships) and those on the margins of a genus, evincing (to borrow Forte's term) only "shirttail" status. The "characteristic members of a genus" as those (in addition to the cynosural scs) that,

> evince some or all of three qualities: (i) they are all subsets or supersets of each other (except for the cynosural scs themselves, which may or may not be inclusion related); (ii) within their interval vectors, they display some uniformity in patterns of interval-class [...] distribution; or (iii) within their successive-interval arrays, they display some uniformity in interval patterns.

As such, these set classes are seen as in some way privileged, forming the 'essence' of the genus in question. In comparison with the various 'rules' established by Forte, these criteria appear somewhat vague, but, as will become apparent, the process of determining the characteristic sets of a genus is an empirical one, based not only upon the abstract properties of the model, but also reflecting the realisation of particular relationships within the musical object. The implications of this reflective process are examined in Chapters 4 (pp. 152ff.) and 7 (pp. 256ff.).

Such 'tailor-made' genera avoid many of the problems of interpretation associated with Forte's system, but they also bring particular problems in terms of the identification of the cynosural sets (and hence genera) from the myriad possibilities. In an attempt to provide some criteria for the selection process Parks (p. 211) cites four "preference rules":

> 1. Prefer those genera that contain as members as many as possible (ideally, all) of the scs represented in the musical object that is the subject of investigation. Then, in no particular order of precedence:
>
> 2. Prefer that genus whose primary members or characteristic members embrace the largest number of scs from the musical object.
>
> 3. Prefer that genus which contains the smallest number of members or which contains the smallest number of primary members.
>
> 4. Prefer that genus whose cynosural and member scs evince the greatest similarity to familiar pitch constructs.

The practical and theoretical implications of these guidelines are explored most fully in Chapter 4 (pp. 141ff.).

Having established the identity of the genus in these terms, the analyst is still faced with the task of apportioning analytical meaning to the results. The bald taxonomy that a genera table (Fortean or Parksian) represents is no more than that, a list of sets associated by some construct. The significance for the analyst lies in utilising this information as a means of highlighting particular features, relationships, processes or structures in the music. As Parks (p. 212) sees it, "the fundamental object of both Forte's theory and mine - or, for that matter, of any inclusion theory of pitch structure - is to facilitate modelling pitch structure in ways that render graspable, aspects of structure that are otherwise elusive." While Parks's genera model may in many cases provide a closer 'fit' to the musical object than Forte's more abstract model, there remains, as Parks (p. 212) points out, the problem of "knowing the properties of the model and understanding its properties in some meaningful sense so that we can extend its positive analogy to the object." In the case of Parks's (1989) Debussy study the genera invoked were relatively few (five in all) and they were usually based upon familiar pitch constructs (notably diatonic, whole-tone, chromatic and octatonic formations). In such cases the characteristic sets of a genus can be readily identified. More obscure and complex genera inevitably present greater difficulties of interpretation, however. By contrast, the more theoretically based genera of Forte exhibit particular characteristics and properties with which the analysts can become familiar, and which may then be applied to a wide range of musical works. Parks (p. 213) memorably compares the two approaches thus,

> One theory is like opening a closet with twelve templates sitting on its shelf. The investigator reaches up and takes down the templates, turns to the object, and tries to fit each template onto it. No template fits exactly, but several come close. The other theory is like opening a closet that is so packed full of templates that they burst out, cascading off the shelves knocking the investigator to the ground. But as she struggles to her feet, the investigator knows that somewhere in that heap of templates exists one or more which will fit *exactly*, or nearly so, the object resting on the table beside her, if only she can find it. Either way, the investigator will have to explore carefully both the relationship between model and object and the nature of the templates as models, a heuristic process that can be very fruitful for music analysis.

The initial findings of generic analyses by the leading proponents in this field, based upon a relatively small range of works, would seem to suggest that the genera models of Forte and Parks may each be suited to particular repertoires.[20] A particular difficulty, for example, with Forte's model relates to the wide spread of what might be felt intuitively to be diatonic sets over a number of distinctly un-diatonic genera.[21] For Parks (1998b, p. 238), reflecting the instinctive response of many analysts, "if a passage's pitch sets all belong to diatonic simple genus 7-35, for instance, then the passage is diatonic." At the same time, however, Parks is candid about the difficulty of constructing genera for works that might (again instinctively) be regarded as nearer to the "atonal" end of the generic spectrum:

> I have to say that although I have done a fair bit of preliminary analytical work on Berg's Op.2/4, I don't feel that I could construct genera that would work as well as I would like for the piece. The experience of dealing with this song leads me to think that such a general theory is more useful for some composers and less useful for others - Schoenberg and Berg in particular, composers that are really difficult, at least for me, to approach in this way.[22]

In the light of such speculation, the significant changes evident in Schuman's music, between the overt diatonicism of the Third Symphony and the quasi-serial circulation of the chromatic encountered in the Ninth, offer a valuable opportunity to make further comparisons in this area.

Saliency and the interpretation of genera matrices

The issue of saliency was addressed in passing above. Before moving on to consider segmentation criteria, however, it will be useful to readdress this issue as it relates more specifically to Schuman's oeuvre. The theories of generic relations outlined

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[20] See, for example, Kennett (1995, in particular pp. 170-71).
[21] See Forte 1988b, pp. 211-13.

above enable the analyst to conduct what is effectively an "audit" of pitch constructs and their inter-relationships within a particular work. It should be acknowledged, however, that such information is potentially misleading if it does not reflect in some way the perceived interplay of forces that serve to articulate the musical form, described above as the rhetoric of the musical discourse. In other words, the analytical interpretation should serve, in broad terms, to illuminate processes projected by the work.[23] In the absence of functional tonality, it is the very fact that some sonorities are projected more strongly than others that serves to articulate the musical argument, and yet a genera matrix makes no distinction between sets that are afforded a particular priority in several domains and those that may appear only fleetingly. As Forte suggests (above), it is incumbent on the analyst to ensure that the genera profiles produced are not skewed inappropriately by the influence of sets that may project a strong generic 'personality' in theoretical terms (singletons are obvious candidates here), but such judgements must also take some account of the priority afforded sets in the manner of their presentation.

A systematic means of ranking sets according to the strength with which they are projected at the musical surface is outlined by John F. Doerksen (1998), but it is the contention of this study that the issue of salience may be adequately addressed in most cases on an empirical basis. In the first instance, it is particularly important that all sets (regardless of salience) be included in the genera matrix as an objective measure of the generic focus (or, conversely, heterogeneity) of a particular passage. The subsequent interpretation of the genera matrices may then review issues of salience in order to arrive at a suitably balanced analysis.

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[22] In Ayrey (1998b, p. 233). Interestingly, Parks finds that "Webern is a little easier, at least the Webern I've looked at" (ibid.).

[23] This is not to deny the valuable insights that are often revealed by "anomalous" analytical findings, but merely to emphasise that an analysis that runs completely counter to the analyst's "feel" for the music must be treated as suspect.

Approaches to Segmentation

Theoretical issues

To a large extent, segmentation criteria define the outcome of any analysis invoking pitch-class set relations, but it would seem that generic theory is particularly sensitive to the choices made at this crucial first stage of analysis. Kennett (1995) highlights the issue on two levels. In terms of the initial decision making, a comparison of different segmentations of particular works graphically demonstrates the impact of segmentation on the resulting generic profile. Kennett (pp. 42-56) compares segmentations of Schoenberg's Op.19/6 by Forte (1973), Cook (1987), Dunsby and Whittall (1988) and Kennett himself, showing them to yield significantly different genera profiles. He then argues (p. 55) for "a more composite and imbricated approach" as a means of reflecting these varied interpretations. A similar comparison of varied readings of Berg's Op. 2/4 (Kennett 1998b, pp. 184-87) further serves to highlight the different generic profiles resulting from "verticalist", "horizontalist" and "completist" segmentations. While the profiles focussing upon vertical and horizontal formations each "increase our appreciation of the complexity of Berg's harmonic and motivic processes [...] not one segmentation or resultant profile could honestly be said to describe comprehensively how those processes 'work'" (ibid., p.186).

The argument for a segmentational strategy that acknowledges the possibility of such multiple readings on the part of the listener/analyst is echoed in the work of Hasty (1981) and Schmalfeldt (1983) whose segmentation of the opening bars of Berg's *Wozzeck* is cited by Kennett (1998b, p. 185), noting that,

> Janet Schmalfeldt is quite explicit about the multi-layered nature of segmentation strategy in the verticalist and horizontalist domains: in her segmentation of the first three bars of *Wozzeck* Act I [...] most pcs are segmented

> more than once, vertically and horizontally, and some are segmented three different ways.

In considering the opening bars of Stefan Wolpe's String Quartet (1969), Christopher Hasty (1981, p. 59) supports the possibility of the co-existence of multiple segmentations reflecting the association of pitches in different musical "domains", suggesting that "[r]ather than look for a single correct segmentation, let us consider the possibility of ranking these segmentations. We can consider stronger those segmentations which are supported by the greater number of domains." He goes on to say that,

> I do not believe that contradictory segmentations entirely efface one another. Rather, ambiguity, if it occurs, is an extremely important aspect of this music. Although [...] some segmentations may have deep consequences for the work while others are quite ephemeral, the surface of the work supports all these structures and the surface absolutely determines the expressive quality of the music (ibid., p. 59).

This view has a particular resonance with the aims of generic theory, at least as it is practised in this study, where a generic profile is used to provide a comprehensive taxonomy of surface pitch formations as a means of articulating form and structure. This approach is discussed in greater detail below.

The second point to arise from Kennett's work concerns the broader segmentation of works into sections and subsections of varying sizes and the varying generic profiles that result. It is perhaps to be expected that generic profiles embracing long stretches of music should mask the generic relations evident in smaller subsections of a work. In the case of extended works, such as the symphonies of Schuman, it is precisely these shifts of generic allegiance that occur as the work progresses that form the focus of analytical interest. A particular feature of such changing generic contexts, as described in Kennett's study of works by Bridge,[24] is the concept of "multivalency" whereby, "a prominent set may be experienced as a bi-triadic aggregate on a surface level, as part of a micro-section of dia-tonal species on a deeper level, and as part of an overall atonal or octatonic context at the same time" (1998a, p. 157). The term "level" here, as defined earlier, refers to the specificity of analytical focus (micro-section, movement, work) as opposed to any reductive middleground or background in the Schenkerian sense. The sectional nature of much of Schuman's music (a feature shared by the music of Bridge) means that it is well suited to analysis in these terms.

Practical application

What follows is a discussion of the aims and objectives of the segmentation strategy adopted in the light of issues raised above. While specific segmentation criteria will be explained most easily in the context of the individual analyses, what is outlined here is the broader 'ethos' of the approach to segmentation, from the delineation of large sections within works to the immediate surface level of individual pc sets.

As demonstrated above, the rhetoric of Schuman's musical language provides a clear articulation of surface events, marked by often stark contrasts in terms of rhythm, harmony and texture. Such divisions in the orchestral works are further reinforced through the juxtaposition of different instrumental choirs. The importance of instrumentation in the articulation of structure is emphasised by Schuman (in Ramey 1980, p. 20):

> When I compose an orchestral piece, I think in a totally orchestral way. I never think of a melody and then assign it to an oboe; I think of an oboe melody. I wouldn't know how to sit down and sketch something in the abstract that I would then score for orchestra [...] My scoring is part of the structure of the music. Only very rarely do I use color for its own sake.

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[24] Kennett (1995) and its 'distillation' (1998a).

Such is the clarity with which these larger structural divisions are presented in Schuman's music that few problems are presented to the analyst. Numerous examples of such sectional structures will be found in the ensuing analyses. However, the variety of surface pitch constructs encountered in Schuman's music, and their varied means of presentation ensures that no one 'catch-all' approach to segmentation will be effective in isolating the set structures that comprise the generic makeup of a particular passage.

In this regard Schuman's music is by no means unique: no such system of segmentation has been devised that is universally accepted as the definitive response to any repertoire. Any segmentation is simply the response of the analyst to the music under consideration. That response may (should) be judged with regard to its appropriateness, but that is not to rule out the possibility of different responses to a particular passage by different analysts. The sensitivity of generic analysis to segmentation has served to highlight this point as Forte (1998a, p. 227) makes clear, responding to aspects of the analysis by Ayrey (1998a) of Berg's Op.2/4:

> I'm certainly not arguing with this segmentation, but it does reflect his personal reaction to the music and that's absolutely inescapable in segmentation. In that connection, I might say that the rules I presented in *The Structure of Atonal Music* (Forte 1973) are out of date (the book is almost twenty-five years old, so you have to make allowances for that). My attitudes to this issue have changed rather considerably.

Lest this be taken as a licence for 'segmentation by whim', it should be emphasised that what is being advocated here is an informed response to the music by an experienced analyst. Referring to the role of a particular set in Berg's *Wozzeck* music in the context of his own informal examination of Op.2/4, Forte (1998a, p. 229) continues:

> How do I know this? Because I have a lot of experience in analysing *Wozzeck*, so I'm not looking at it as a naïve person. I'm looking at it from experience, just as you would when you analyse a piece, and just as Craig Ayrey did when he analysed the song. When you start to use an abstract tool like pitch-class set

> genera, you cannot rule out the human factor and the variability that this entails - I think that's great because it will give your analysis a certain stamp and allows people to discover different things in doing analysis.

This is a position comparable to that described by Eagleton (1996, p. 73) in the debate surrounding the relationship between 'reader' and 'text' (referring to the work of Wolfgang Iser) whereby,

> Iser permits the reader a fair degree of freedom, but we are not free simply to interpret as we wish. For an interpretation to be an interpretation of *this* text and not of some other, it must be in some sense logically constrained by the text itself.

The credibility of the individual analytical response described here relies upon the justification and transparent presentation of the segmentation criteria employed. The following discussion outlines the criteria employed in this study in general terms.

Segmentation criteria

The first stage in the analysis must be the provision of a heuristic taxonomy of pitch materials at the musical surface. It is the quest for a "completist" taxonomy that informs the segmentation strategy. Thus in spite of the obviously horizontal inclination of Schuman's compositional approach, the vertical dimension also forms a crucial part of the overall picture, not least in the gradual integration of the horizontal and vertical dimensions in later works. Overtly contrapuntal passages can be divided into two distinct types. On the one hand there are those that serve to maintain, to recall Broder's (1945, p. 19) term, "a definite kind of harmonic texture", forming a harmonic backdrop for a principal melody and also, in many cases, a structural "pillar" of harmonic stability. Examples abound in the Third Symphony (see Exs. 3.11, 3.14, 3.15), while the climax of the Sixth Symphony presents a thirteen part texture as a harmonically stable backdrop to the concluding statement of the principal theme (Ex. 7.11). A rather different approach is encountered in "all-thematic" (often canonic) passages where each strand of the polyphonic texture exhibits a distinctive melodic profile. Again examples will be found in the analysis of the Third Symphony (Exs. 3.2 and 3.3). In either type of contrapuntal texture in addition to the horizontal projection of thematic materials or specific collections, the resultant vertical sonorities also play a crucial role in determining the generic character of the passage in question. As a result the genera matrices for such passages include all vertical formations resulting from the interplay of contrapuntal lines (see for example, Ex. 3.4 and Table 4.2).

In the horizontal plane, the instinctive melodic inspiration of Schuman's work provides a number of challenges regarding the approach to segmentation. In some instances melodic formations fall into discrete, clearly partitioned fragments, but this is very much the exception (see, for example Ex. 3.6). Much more common is what Saylor (1986, p. 167) describes as "a broad nonrepetitive cantelina" offering few segmentational cues such as rests, sequential patterns and so forth. From the listener's perspective it must be acknowledged that such passages are open to a variety of interpretations; similarly from a segmentation perspective they can be heard in a number of different ways. In an attempt to reflect this ambiguity several different segmentation criteria may be employed simultaneously. A tiered approach begins with a search for paradigmatic patterns of association based upon similarities in the domains of pitch, contour and rhythm (see, for example Ex. 3.2). This 'neutral' level of the segmentation process, which owes much to the techniques of musical semiology, notably the work of Ruwet (1987) and Nattiez (1982), forms a 'base-line' against which other criteria may superimpose additional readings.

The second tier of the segmentation process employs the slightly more diffuse criteria outlined by Christopher Hasty (1981, p. 58) where "a change of value in a particular domain creates a discontinuity - a difference which isolates distinct objects for our attention." The "domains" invoked by Hasty (p. 57) include "timbre, dynamics, intervallic associations, register and contour".[25] While the domains of rhythm and contour prescribe many of the paradigmatic associations that form the segmentational base-line described above, other domains, notably that of "intervallic association" often serve to outline pitch structures that do much to clarify the generic characteristics of particular passages. The charge of circularity hangs over any predetermined search for particular sonorities, but a degree of latitude may perhaps be granted in the case of two universal and quite distinctive cases, namely the diatonic collection and the chromatic aggregate.[26] Schuman employs the diatonic collection in both its scalic and cyclic form (see Chapter 3). Once established, any deviation from the prevailing diatonic collection marks a significant discontinuity in the domain of intervallic association and hence becomes a factor in the segmentation process.

The end result of all these processes is a necessarily multi-layered segmentation that reflects aspects of the ambiguity inherent in the music itself. Above all it should be emphasised (echoing Forte's remarks above) that the segmentation rests ultimately upon a long term and detailed familiarity with the music in question and with Schuman's oeuvre as a whole. While the length of the works under consideration makes the illustration of complete passages impractical, the segmentational criteria are clearly set out in each individual case and the principles illustrated in musical examples that usually embrace the beginning and conclusion of the passage in question. The resulting lists of sets for each passage are provided in tabular form.

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[25] The domains invoked by Hasty are those given prominence by the music under consideration by Wolpe, Schoenberg and Webern. The very different style of Schuman's music is naturally reflected in a different range of values attached to specific domains. In Hasty's terms "The definition of each domain is largely a stylistic matter" (1981, p. 58).

[26] The unique property that defines these so-called "deepscales" in the equal tempered twelve-tone system lies in their interval vectors. In the chromatic sets 7-1 [654321], 6-1 [543210], and the diatonic 7-35 [254361] and 6-32 [143250] each interval-class is represented "with unique multiplicity", resulting in "maximum hierarchization through transposition within the system" (Gamer 1967, p. 41). In other words, no other scales produce a different number of invariant pitches at each level of transposition, and the interval producing maximum invariance (in the case of the major scale, ic 5) is also responsible for the generation of the scale itself. For more on deepscales and their properties, see Gamer (1967).

In his preamble to the Cambridge symposium on genera theory (cited above) Craig Ayrey (1998a) speculated that such theories arrived just as the bubble of the 'new formalism' of the 1980s burst: "agendas have changed, interests shifted, and music is valued differently". In this new academic climate theoretical models of pitch-class set genera form an easy target, so easily represented in terms of the arid formalism that divorces music from its societal context, and ultimately from its audience. But a concern for aesthetic appreciation and the valuing of a work as a product or symptom of its time and place does not preclude close engagement with the musical 'text'. Indeed it is a central thrust of the analyses presented here that the heuristic process of investigation facilitates not only a more specific understanding of Schuman's music, highlighting the extent to which its communicative power derives from a meticulous attention to detail in the manipulation of its materials, but that it also informs a wider appreciation of the work of a composer keenly aware of the momentous shifts and changes that characterise American society in the mid-twentieth century.[27]

[27] As Pieter van den Toorn (1995, p. 19) observes, "analysis may be prized as much for the process as for the results, for the doing as for the finished product; the latter can matter only to the extent that the process is undertaken."

PART 2:

NEOCLASSICAL MODELS - SYMPHONY NO. 3 (1941)

CHAPTER 3

FORMAL ARCHETYPES AND DIATONIC COLLECTIONS

Schuman's Third Symphony has come to be regarded an important landmark in his career, favourably compared with the Third Symphonies of Copland and Harris as a "modern classic" (Hitchcock 1988, p. 231). From an analytical perspective, it provides a clear and lucid example of his early musical language, fully formed and in the service of an ambitious musical statement. In its neoclassical reliance upon established formal archetypes, contrapuntal textures, and an extended diatonic vocabulary shorn of traditional tonal function, the symphony may also be seen to reflect Schuman's enthusiasm for the music of Stravinsky at this time.[1]

However, such allegiance brings with it an inevitable dilemma for a composer whose primary orientation in terms of musical genre is towards the symphony. As Jonathan Cross (1998, pp. 7-8) points out, for Stravinsky the "defining traits of modernism" were "its fragmentation, its discontinuity, its primitivism, its eclecticism, its pluralism, its oppositions" - tendencies seemingly at odds with the very concept of the symphony. For Schuman, then, the appeal of Stravinskian neo-classicism appears to have been stylistic, rather than philosophical. Characteristics such as the block-like juxtapositions of instrumental groups and the invocation of neo-baroque formal archetypes symptomatic of (recalling Dahlhaus) an "architectural" approach to form reflect this influence, but Schuman's philosophical position is essentially a conservative one. Indeed, such is his concern for unity and thematic integration in the Third Symphony that a number of critics questioned the use of the term symphony in relation to it. Lawrence Morton (1944, pp. 100-02), for example, observes a "four-movement

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[1] See the interview with Dufallo (1989, p. 383), cited in Chapter 2 (p. 47).

scheme, without any of the tensions and oppositions and conflict that we are entitled to expect [from a symphony]", while for Lou Harrison (1944, p. 33) there is "a perfectly good name for a composition involving a passacaglia, chorale, fugue and toccata. It is a suite, not a symphony."[2]

In contrast to Stravinsky, Schuman's is a traditional response to what (from the perspective of Adorno) Max Paddison describes as the "dilemma of modernism",

> the predicament faced by the artist caught between, on the one hand, the traditional demands of the art work for unity and integration (the harmonious relationship between part and whole) and, on the other hand, the loss of faith in any overarching unity on both individual and social levels in the face of the evident fragmentation of modern existence.[3]

For Schuman, as for a number of American composers, it is a dilemma that takes on a distinctively 'New World' slant as they attempt not simply to maintain *la grande ligne*, but to establish a corpus of American works to be associated with it.[4] In later works Schuman's response sees him increasingly drawn to a more traditional view of the symphonic ideal owing much to the values of development, unity, cohesion and the 'resolution' of a dialectical tension inherent in the individual work. The challenge was to achieve this in a modern idiom, divorced from traditional tonal function. It is a process that begins here in the Third Symphony.

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[2] Both citations from Schnepel (1995, pp. 478-79).

[3] Paddison (1996, p. 52), cited by Cross (1998, p. 8).

[4] This "balancing of the progressive and the traditional" is observed by Cross (ibid., p.129) in the work of Tippett and a number of other "reactionary" British composers. Interestingly, he goes on to note that "similar observations could arguably be made for that generation of American composers who grew up with Copland (born 1900), many of whom learnt about Stravinsky from Boulanger". It will be argued in Chapter 6 that the approach of two of these figures (Harris and Schuman) owes at least as much to the "traditional" (Schoenbergian) view of unity and development.

While the Third Symphony is to be examined from a number of perspectives, the present chapter is primarily concerned with the relationship between melody (the point of origin of almost all of Schuman's music) and harmony. Formal archetypes will be shown to provide a framework in which the melodic materials determine the pitch-class content of accompanying collections, subverting the traditional concept of the bass progression as the source of harmonic and structural definition. (An important aspect of the analytical process here is the production of a comprehensive taxonomy of pitch materials (what might be seen as the vocabulary of Schuman's early musical language) forming the raw 'data' for the consideration of genera based models in Chapter 4.) On a broader scale, strategically placed areas of harmonic stability, often 'grounded' over a sustained pedal note, will be seen to articulate large-scale structural divisions within the work, with the figurations and gestures that form the rhetoric of the Grand Tradition playing a crucial role in creating the formal boundaries that orientate the listening experience, most obviously at points of 'cadence'. In this sense the musical surface is clearly articulated and communicative, but with the emphasis on thematic transformation and variation (as opposed to development) the source of the music's inner momentum remains elusive. What (if anything) has replaced the tonal 'dynamic' that invested the rhetoric of the Grand Tradition with its original meaning? Does the Third Symphony simply present an essentially inert neo-classical facade, or are these gestures and forms given new meaning in the context of a post-tonal musical language?

Formal design and thematic integration

The published score denotes the work as being "In Two Parts (Four Movements)", as follows:

Fig. 3.1 Symphony no.3: Distribution of movements

Part I	Passacaglia	Bars	1-145
	Fugue		146-382
Part II	Chorale		1-141
	Toccata		142-428

While the adoption of these formal archetypes can be seen as a reflection of Schuman's predominantly linear approach to composition they were also, from an American perspective, very much 'in the air' at the time.[5] Emphasising the continuity between the movements in each part, Schuman offered the following observations regarding this design:

> With something like the Third Symphony, which is a very useful work and very well integrated thematically, you definitely feel the end of the first half. I never said that the work was in four movements, I always said that it was in two parts[...].[6]

Schuman's observation regarding the work's thematic integration is echoed by Vincent Persichetti in his analysis of the symphony (Schreiber and Persichetti 1954, p. 93), noting that, "[t]he entire work is based upon the Passacaglia theme and a remarkably unified whole is achieved." Persichetti focuses in particular upon a number of intervals from the Passacaglia melody that can be heard to inform subsequent thematic materials, most notably the octave, fourth/fifth, sixth, seventh and tenth.[7]

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[5] Dorothy Slepian (1947) cites the use of such forms and devices in the works of Leo Sowerby, Walter Piston, George Gershwin, Aaron Copland, Schuman, and Wallingford Riegger, to name but six, describing in particular the place of canon, fugue, ground bass, passacaglia, chorale preludes and toccatas in a variety of works. Early works by Schuman invoking such forms include: Four Canonic Choruses (Chorale Canons) (1932-3), Canon and Fugue for piano trio (1934, subsequently withdrawn), Prelude and Fugue for Orchestra (1937, unpublished), String Quartet no. 2 (1937), comprising I. Sinfonia II. Passacaglia III. Fugue, and String Quartet no.3 - Introduction and Fugue (1939). For an additional view on a possible explanation for composers' renewed interest in these forms, see Stein (1959).

[6] Quoted in Clark (1982, p. 232).

[7] In a similar vein, see Broder (1945, pp. 21-22).

Ex. 3.1 illustrates the primary themes associated with each movement of the work and, informally, some motivic connections between them. Three distinctive motivic types are discernible: type 'a' comprises a perfect fourth enclosing either a major or minor second, type 'b' a succession of three or more perfect fourths, while type 'c' takes the form of a fixed pitch acting as a point of departure and return, with successive intervals usually expanding. Two further, less distinctive motives are those formed by fragments or complete statements of the diatonic scale ('d'), and the triad (major or minor), type 'e'. Motive types 'a' and 'c' also undergo a degree of development, or expansion. The perfect fourth of 'a' is heard to expand to a tritone enclosing a major or minor second as before ('a^1'), while 'c' can be associated with figure of successively rising and falling intervals, forming a melodic 'zig-zag' (c^1). A comprehensive account of the motivic connections illustrated in Ex. 3.1 is not the primary objective here, however. A few observations will suffice to illustrate the high degree of thematic integration that permeates the work. Note in particular the close relationship between Themes A and C that open each half of the symphony. The deployment of a motive type (in this case 'a') immediately followed by its expansion ('a^1') is typical of Schuman's approach to thematic development, a topic to be explored in depth in Chapter 6. Motive 'a' also provides an almost continuous presence through the opening theme of the final Toccata (Theme D). Of the four principal themes (A-D) only the Fugue (Theme B) does not open with an unequivocal reference to motive type 'a'.[8] Further thematic connections may be traced throughout Ex.3.1.

Such is the level of thematic integration illustrated here that each movement effectively presents a thematic transformation of the opening passacaglia theme. In this sense the work is monothematic, a characteristic entirely in keeping, of course, with the

[8] That Theme B does emante from an 'a'-type motive is sensed intuitively, however. Rotation of the pitches C^5 and G^5 in the opening bar (forming the succession B^4 - C^5 - G^5) reveals the association more clearly. For more on such techniques, see Chapter 6.

neo-baroque formal archetypes employed throughout the work. As the source of all that follows, the Passacaglia is the logical point of entry for a more detailed consideration of pitch materials.

Passacaglia: formal delineation and diatonic collections

Although not designated as such in the score, the Passacaglia takes the form of an initial canonic presentation of the Passacaglia theme (Theme A), followed by a further four 'variations' (Fig. 3.2):

Fig. 3.2 Passacaglia: movement plan

b.1	b. 50	b. 74	b. 86	b. 121
Canon	'Var 1'	'Var 2'	'Var 3'	'Var 4'

'Canon'

Theme A is first presented in the form of a four voice canon, with each new entry of the theme (discounting octave displacements) a semitone higher than the last (A_{T0}, A_{T1}, A_{T2}, etc., as represented in Fig. 3.3). Each voice goes on to unfold a counterpoint (CP) against the new entry, until a four voice texture is achieved. With the entry of the fifth voice (A_{T4}), the first voice reverts to the original melody, doubling the new part; the result is a completely canonic texture. (Interestingly, Schuman was to return to this device some thirty years later in the opening bars of the Ninth Symphony.[9])

[9] See Chapter 9.

Fig. 3.3 Canon: distribution of voices

	b. 1	b. 7	b. 14	b. 21	b. 28	b. 35	b. 42
high ww							AT6
horns						AT5	CP^1
violin 1				AT3	CP^1	CP^2	CP^3
violin 2		AT1	CP^1	CP^2	CP^3	AT5	CP^1
viola	AT0	CP^1	CP^2	CP^3	AT4	CP^1	CP^2
'cello			AT2	CP^1	CP2	CP^3	AT6
low ww/d-bass					AT4	CP^1	CP^2

Falling into such discrete and clearly delineated sections, the movement provides an ideal opportunity to test out the segmentation strategy outlined in Chapter 2. Each variation not only casts a different light upon the presentation of the theme in terms of its (horizontal) segmentation, but it also projects the theme in a new harmonic (vertical) context. A satisfactory, 'completist', segmentation these passage will need to account for pitch formations on a number of levels.

In the case of the initial canon, the segmentation strategy will be required to account for pitch formations from three perspectives, outlined below. The gradual unfolding of the canon serves to give equal weight and prominence to all four voices; in essence it can be heard as a single long melody (in the viola) as highlighted in Fig. 3.3 by the succession A_{T0}, CP^1, CP^2, CP^3. The initial presentation of Theme A (bb. 1-7) is characterised by a symmetrical antecedent - consequent phrase structure projecting primary segments in the form of an opening hexachord (6-z48 and 6-z25 respectively) and a connective trichord (3-3 and 3-7), as shown in Ex.3.2. The respective hexachords may be further subdivided into an opening gesture (the anacrustic rising octave/minor sixth, marked out by the minims E and A) and a continuation (forming two five note subsets, 5-14 and 5-23 respectively). The continuation of the melody (CP^1, CP^2, CP^3) is less clearly defined, with few cues to indicate clear primary segmentations. The criteria for the segmentation lie in the extent to which the continuation may be viewed in terms of the elaboration of melodic paradigms outlined in the initial theme. The resulting taxonomy of pitch materials is presented in Ex.3.2. (The points of imitation are highlighted by the vertical dotted lines, with the voices marked CP^1, CP^2, CP^3.) Of the resulting twenty-two segments, all but eight clearly derive from characteristics of the opening phrase of Theme A. The three remaining paradigms (the three right hand columns of Ex.3.2) outline brief diatonic scale fragments, a three note cambiata-like shape, and a single, less easily classified diatonic formation (4-13).

A taxonomy of vertical sonorities resulting from the combination of these horizontal lines serves to demonstrate Schuman's evident concern for the control of the vertical dimension, and provides a second segmentational perspective. Exs.3.3b and 3.3c illustrate the three voice texture (from b. 14^3) and the four voice texture (from b. 21^3) respectively. From this point on, each repetition of the theme is simply a transposition of the four voice texture (see Fig.3.2). A pitch integer representation of this passage (Ex.3.4) illustrates the vertical segmentation. From b. 14^3, only eleven three and four note sets result: #3: 4, 6, 7, 9, 11 and #4: 14, 16, 20, 22, 23, 26. All are subsets of the diatonic collection 7-35, and all but one (4-16) are subsets of the diatonic hexachord 6-32, investing the passage with a clearly focussed "harmonic texture".[10]

The full extent of Schuman's control of harmonic materials is revealed in the final aspect of the set structure to be considered: the distribution of pitch-classes through the totality of the musical texture. With the introduction of CP^1 in b. 7^3 a remarkable succession unfolds (see Ex. 3.3a). The first two complete bars (bb. 7^3-9^2) see CP^1, in combination with Theme A, unfold the diatonic collection 7-35 [G, Ab, Bb, C, Db, Eb, F], corresponding to the Ab major scale. The introduction of the subsequent D natural (b. 9^3) extends the diatonic cycle (the generative cycle of fifths) by one pitch-class to form the extended collection 8-23 [C, Db, D, Eb, F, G, Ab, Bb]. Thereafter the

[10] Recalling Nathan Broder's (1945, p. 19) description. See Chapter 2, p. 70.

cycle is extended twice more to produce the collections 9-9 [G, Ab, A, Bb, C, Db, D, Eb, F] and 10-5 [F, F#, G, Ab, A, Bb, C, Db, D, Eb] (Ex.3.3a). The first such extension adds A natural, the next pitch in the cycle, but the last introduces F#, a pitch from the opposite end of the cycle, as illustrated in Fig. 3.4.

Fig. 3.4 Diatonic cycle and pitch-class set designations

7-35:		Db	Ab	Eb	Bb	F	C	G		
8-23:		Db	Ab	Eb	Bb	F	C	G	D	
9-9:		Db	Ab	Eb	Bb	F	C	G	D	A
10-5:	F#(Gb)	Db	Ab	Eb	Bb	F	C	G	D	A

This gradual unfolding of the diatonic cycle establishes the harmonic context for the remainder of the canon, and as will become apparent, provides the generative force behind almost all pitch formations in the work.[11] With the entry of the fourth voice (at A_{T3}, b. 21^3) a tripartite pattern of extended diatonic collections is set in train (Ex.3.3c), outlining the following arch-like succession: $9\text{-}9_{T9} \rightarrow 8\text{-}23_{T6} \rightarrow 9\text{-}9_{T9}$, in which five pitches are held invariant throughout (Fig. 3.5):

Fig. 3.5 Intersection of 9-9 and 8-23 [12]

	$9\text{-}9_{T9}$	[9, 10, 11, 0, 2, 3, 4, 5, 7]
	$8\text{-}23_{T6}$	[6, 7, 8, 9, 11, 1, 2, 4]
Invariant	5-35	[7, 9, 11, 2, 4]

An alternative, equally viable, reading (Ex.3.3c) extends the central collection to form a further $9\text{-}9_{T6}$ collection [6, 7, 8, 9, 11, 0, 1, 2, 4] with the diatonic hexachord 6-

[11] Cf. Persichetti (in Schreiber and Persichetti 1954, p. 50) on the 'quartal' characteristics in much of Schuman's early music.

[12] Henceforth, to avoid unnecessary confusion resulting from Schuman's frequent use of enharmonic equivalent pitches (often determined by a concern for clarity within individual instrumental parts), collections and associated sets will be identified by transpositional level and pitch-class by their mod-12 integer value.

32 [7, 9, 11, 0, 2, 4] held invariant.[13] While this pattern runs through the four four-voice cycles of the canon from b. 21^3 (see Fig.3.2), it is not so clearly projected in the three-voice passage immediately preceding this sequence (from b.14^3), shown in Ex.3.3b. Clear parallels may, however, be drawn with the four-voice passage from b. 21^3; a similar ABA succession of three collections is outlined, in this case $8\text{-}23_{T1} \rightarrow 8\text{-}27_{T8i} \rightarrow 9\text{-}9_{T8}$. The $8\text{-}23_{T1}$ [1, 2, 3, 4, 6, 8, 9, 11] collection is a real subset of $9\text{-}9_{T8}$ [8, 9, 10, 11, 1, 2, 3, 4, 6], but the central $8\text{-}27_{T8i}$ [10, 0, 1, 3, 4, 6, 7, 8] appears to break the expected diatonic allegiance. The 8-27 collection shares the diatonic pentachord 5-35 [1, 3, 6, 8, 10] with 9-9, but not with the initial 8-23. An explanation for this apparent anomaly lies in the local pattern of voice leading heard in the first presentation of CP^1 in b. 10. In this exposed two-part texture the quaver Eb^3 resolves by semitone to D^3 on beat 2 in the lower voice, a pattern retained in the prominent presentation of this feature in the upper voice of b.17. Only when this feature is subsumed into the full four voice texture from b. 21^3 does the regulated diatonic collection sequence assume priority. As will be shown in greater detail in Chapter 5, Schuman's music often invokes the ghost of traditional voice leading in an extremely localised context while structural functions on a larger scale are projected by other means. In the case of the canonic presentation of Theme A shown here, the pervading harmonic context (in the form of the extended diatonic collection) is established from the point at which the movement assumes a two part texture. A taxonomy of the vertical sonorities formed from the onset of the three part texture in b. 14 is presented in Ex. 3.4.

Schuman's deployment of the extended diatonic collection as a 'stable' sonority (which is to say that it is not heard as an inflection of the traditional seven-note collection) is a characteristic feature of early style. As suggested above, it accords

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[13] The first reading takes its cue from the stepwise descent to C in the lowest part, while the proposed alternative is defined by the C of the Passacaglia theme. Central to both readings is the resulting tripartite (ABA) structure.

closely to the neo-classic practice of Stravinsky, with the eight-note collection (8-23) identified by both Ethan Haimo (1987) and Paul Johnson (1987) as an important feature of Stravinsky's work from this period.[14] While Haimo emphasises the cyclic derivation of the collection, Johnson examines the various referential orderings that result from the combination of two seven-note diatonic collections both a fifth and major third apart.[15]

The tripartite (ABA) pattern of extended diatonic collections examined above (Ex. 3.3) projects a clearly defined harmonic rhythm that is repeated throughout the gradually rising sequence of thematic repetition that forms the opening canonic presentation of Theme A. It is this regularity that provides the localised context for the reinterpretation of a traditional formal gesture (the anacrustic trill in b. 49) marking the conclusion of the canonic cycle and impelling the music into the first variation (Ex. 3.5). While it may be argued that much of the impact of this figure emanates from the prior experience of the listener (it is a familiar cadential gesture), it also derives harmonic 'meaning' and impetus from the established pattern of diatonic collections. Following this pattern, the final statement (A_{T6}) projects the harmonic scheme $9\text{-}9_{T0} \rightarrow 8\text{-}23_{T9} \rightarrow 9\text{-}9_{T0}$ (bb. 42-49). Outlining the set $7\text{-}14_{T0i}$ [4, 5, 7, 9, 10, 11, 0], the cadential gesture forms a subset, not of the of the final $9\text{-}9_{T0}$ collection [0, 1, 2, 3, 5, 6, 7, 8, 10], but of the central collection $8\text{-}23_{T9}$ [9, 10 ,11, 0, 2, 4, 5, 7], thus according the cadence with a contextually defined harmonic significance, a quickening of the harmonic rhythm comparable to traditional tonal models. In addition to providing a thread of continuity and stability in the form of established collections and invariant subsets, Schuman is clearly aware of the need to invest an outwardly static formal archetype with an inner

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14 Haimo draws attention to the collection in the context of Stravinsky's Octet for Winds (1924), while Johnson (p. 75) identifies no fewer than twenty three works from *Histoire du Soldat* (1918) through to *Agon* (1957).

15 Although Schuman's use of the eight-note collection in the Passacaglia movement suggests a cyclic derivation, it is also heard as a combination of seven-note diatonic collections in separate voices, most notably in the Fugue movement where, to take one example, Db and Gb collections combine in trumpets 1, 2 and 4 (Db) and trumpet 3 (Gb), (bb. 195-98).

formal dynamic, at least at a local level. The manner in which such formal articulations are achieved is discussed further below.

Before moving on to consider each variation in turn, it will be useful to summarise the pc-set data that have emerged during the course of this discussion. A similar taxonomy of sets will be compiled for each of the subsequent variations to form the basis of a discussion of pitch-class set genera in Chapter 4.[16]

Fig. 3.6 Pitch-class set data - Canon

Horizontal	#3: 2, 3, 4, 5, 7, 9, 11 #5: 14, 23, 35	#4: 3, 11, 13, 26 #6: z25, z48
Vertical	#3: 4, 6, 7, 9, 11	#4: 14, 16, 20, 22, 23, 26
Collections	#7: 35 #9: 9	#8: 23, 27

'Variation 1'

The first variation (bb. 50-73) opens with a fragmented presentation of the Passacaglia theme (Theme A) in the trumpets and trombones against a backdrop of bustling quaver triplets in the strings (Ex. 3.6).[17] The extended diatonic collections of the canon are replaced by a consistently triadic texture (predominantly minor) resulting from the combination of the four string parts. The few deviations from this pattern (comprising the occasional dyad and two questionable chords that may be attributable to missing accidentals) are indicated (in parentheses) in Ex. 3.6.[18] Furthermore, the interaction of this figuration with the Passacaglia theme also results in predominantly

16 In the context of the generic analyses to follow, sets of cardinality 2 and 10 are ommitted from these summaries.

17 The variation bears comparison with a similar passage in the Third Symphony (1938) of Roy Harris (from one bar before rehearsal no. 21, *Piu Mosso*), notably the harmonic backdrop created by the strings, against which melodic fragments are projected in the woodwind.

18 Apparently anomalous vertical sonorities are found in b. 53, where the final chord pits Gb in violin 2 against G natural in the 'cello resulting in the uncharacteristic chromatic trichord 3-3, and in b. 60, where a diminished triad (D, F, Ab) may be attributable to a missing flat (Db) in the viola (the questionable status of these chords is reflected in Fig. 3.8 below).

triadic coincidence. Where melody and accompaniment do not coincide, resulting in four note sets (identified in Ex. 3.6), the effect is that of a localised dissonant inflection, resolving into the triadic texture. This relationship is employed cadentially in b. 63, the climax of this passage, where a repeated auxiliary motion in the strings juxtaposes two triads a tone apart, one coincident with the sustained trumpet triad [Eb, Gb, Bb], the other [Db, Fb, Ab] combining with it to form the 'dissonant' (albeit diatonic) hexachord 6-33. Closure, in the form of a final coincidence between the two strata on the brass triad [Eb, Gb, Bb], is reinforced metrically (b. 63^3) and dynamically (the culmination of the crescendo in the strings). The continuation of the variation (bb. 64-73) comprises three four-note Passacaglia theme fragments isolating three further brass triads (Ex. 3.6).

The texture described ensures a constantly shifting collection of pitches with the choice of triads governed by the pitches of the theme to ensure triadic, or at least diatonic (7-35), coincidence. Similarly, the melodic line of the string texture (violin 1) is also determined in large part by the principal theme in the brass. The melodic aspect of the accompanying texture is emphasised in the opening bars of the variation through a distinctive pattern of interval expansion in the upper line (violin 1), methodically unfolding the diatonic cycle hexachord 6-32. The same melodic pattern (transposed a perfect fifth higher) concludes this passage in bb. 61-63 (beginning F^5 - F^6, with the hexachord 6-32 now subsumed into the seven-note collection 7-35). Between these statements, the phraseology of the predominant brass theme partitions the violin melody into discrete segments (indicated above the stave in Ex. 3.6). All are sub- or supersets of the diatonic collection 7-35 (with the exception of 7-34, perhaps most familiar as the ascending melodic minor scale) and intersect with the pitch-class content of the determinant phrase in the brass. Of the six different sets deployed (5-24, 6-32, 7-34, 7-

35, 8-22 and 8-23), 8-22 is perhaps most significant in the context of the work as a whole, representing an important sub-species of the generative diatonic cycle.

Fig. 3.7 illustrates the relationship between 8-22 (heard in both 'prime' and inverted forms in Ex. 3.6) and those collections that are a product of the diatonic cycle. The defining characteristic of 8-22 is its derivation from a 'gapped' diatonic cycle, effectively skipping the penultimate entry in the cycle of fifths set out in Fig. 3.7. The importance of this collection, and additional sonorities associated with this 'not-quite diatonic' cycle, will be seen to assume further significance as the analysis proceeds, most notably in relation to the generic model discussed in Chapter 4.[19]

Fig. 3.7 Extended collection subsets and 'gapped' diatonic-cycle

	C	G	D	A	E	B	F#	C#	G#
9-9	0	7	2	9	4	11	6	1	8
8-23	0	7	2	9	4	11	6	1	
8-22	0	7	2	9	4	11	6	( )	8
8-22i	0	( )	2	9	4	11	6	1	8
7-35	0	7	2	9	4	11	6		
6-32	0	7	2	9	4	11			

The segmentation of the Passacaglia theme (Theme A) in the brass (Ex. 3.7) reflects both the process of fragmentation (producing a number of clearly articulated primary segments defined by rests), and the relationship of those fragments to the original form of the theme (reiterated no fewer than seven times in the preceding canon). The paradigmatic segmentation crosses primary segment boundaries, subdividing them and highlighting their derivation from the original presentation of the theme (note, for example, the 'fifths-cycle' trichords (3-9 and 4-23) deriving from bb. 2-

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19 While the 'gapped' cyclic collection (8-22) is not as readily associated with Stravinsky's work as the more conventional extended collection discussed above, the generative potential of the diatonic-cycle (both 'gapped' and 'un-gapped') is highlighted by Elliott Antokoletz (1984) as a characteristic feature in the music of Bartok. Although the interval-cycles other than those of the fifth are shown by Antokoletz to generate a multitude of symmetric sonorities in Bartok's music, a 'gapped' diatonic cycle is seen to generate an eleven-note collection in the Bagatelle no.XI (pp. 206-07), while further expansions of the regular diatonic-cycle are seen to generate collections of up to ten notes in the Concerto for Orchestra (p. 304). A more formal consideration of the 'gapped' diatonic-cycle is found in Harrison (1997, pp. 396-99) in relation to Milhaud's Second Chamber Symphony (more on this in Chapter 4/Appendix A).

3 of Theme A). One particular figure that is highlighted by this fragmentation process is the 'semitone plus fourth(s)' motive (a^1 in Ex. 3.1), forming pc-sets 4-16, 5-14, 3-5 and 4-6 . The set data for the variation as a whole is as follows:

Fig. 3.8 Pitch-class set data - Variation 1[20]

Melodic (tpt)	#3: 5, 9, 11 #5: 11, 14, 27, 34, z36	#4: 6, 16, 17, 22, 23
Melodic(vln 1)	#5: 24 #7: 34, 35	#6: 32 #8: 22, 23
Vertical (strings)	#3: [3], [10], 11	
Vertical (strings+brass)	#3: [3], 6, 8, 11	#4: [12], 14, 17* 20, 22, 26, 27, z29 #6: 33

'Variation 2'

The second variation falls into two clearly delineated sections and illustrates further the organisational principles underpinning Schuman's musical language. In the first instance the melodic line will be shown to confirm not only the central role played by the diatonic cycle in the generation of pitch constructs, but also the importance of invariant relations in the articulation of the music's sectional structures. Invariant and variant relations will also be seen underpin the second aspect of the analysis presented here, the relationship between melody and harmony, with another gesture typical of the Grand Tradition reinterpreted in terms of its locally defined context.

The first half of the variation (bb. 74-79) sees the Passacaglia theme presented in the upper woodwind over two five-note chords in the strings, tuba, timpani and lower woodwind (Ex. 3.8) while in the second half the melody is transferred to the strings over a timpani pedal (bb.80-86). Ex. 3.9 displays a segmentation of the newly varied theme, adopting a similar methodology to that employed in Ex. 3.7. The melodic line of

20 Bracketed sets [ ] reflect their questionable status as discussed above. 'Correction' removes these sets: thus [3-3] becomes 2-3 (therefore not listed) and [4-12] becomes 4-17 (asterisked).

each half of the variation can be seen to form an extended diatonic collection as new pitch-classes are introduced in accordance with the diatonic cycle. Thus the woodwind melody commences with a scalic presentation of the 'white-note' collection $7\text{-}35_{T11}$, before extending the diatonic cycle successively through $8\text{-}23_{T4}$, $9\text{-}9_{T11}$ and $10\text{-}5_{T4}$. The string presentation (from b. 80) similarly projects the collections $8\text{-}23_{T1}$, $9\text{-}9_{T1}$ and $10\text{-}5_{T6}$, respectively.

A sense of continuity between the two halves of the variation is prompted by the intersection of the melodic collections $10\text{-}5_{T4}$ [4, 5, 6, 7, 8, 9, 11, 0, 1, 2] and $10\text{-}5_{T6}$ [6, 7, 8, 9, 10, 11, 1, 2, 3, 4] in the collection $8\text{-}23_{T6}$ [6, 7, 8, 9, 11, 1, 2, 4], forming a diatonic thread running through the variation in a manner similar to that described in relation to the opening canon. While the nine- and ten-note collections projected by the strings are a tone higher than those of the woodwind, the transposition is not reflected literally in the melody, emphasising the operation of collections 'behind the scenes', providing a sense of continuity and, arguably, 'progression' on the basis of transpositional relations between unordered collections.[21]

As in the case of Variation 1, the relationship between these collections is somewhat abstract in that they govern the melodic dimension only. The structure and progress of the music is further determined, however, in the relationship between melody and harmony. All the sets outlined in this discussion are illustrated as an integer reduction (eliminating repeating figuration within bars) in Ex.3.10. In the first half the two five-note chords, each comprising two major triads a minor third apart, form the pc-sets $5\text{-}32_{T1i}$ [4, 7, 9, 0, 1] and $5\text{-}32_{T4i}$ [7, 10, 0, 3, 4], with a C major triad (3-11i) held invariant between them (Ex. 3.8). In combination with the woodwind melody, the chords articulate a distinctive harmonic impetus, on the basis of their intersection with the melodic line, as shown in Ex. 3.10. Thus the first chord [4, 7, 9, 0, 1], sustained

[21] The extent to which such analogies are defensible is considered further below.

through bb. 74-6 and 78, is heard as 'consonant' with the melody, forming a subset of the prevailing melodic collection $9\text{-}9_{T11}$ (Ex. 3.9). The second chord [7, 10, 0, 3, 4], however, contains the two pitch-classes absent from the melody in the first half of the variation, Eb and Bb (pc 3 and 10). As a result the combination of melody and accompaniment in bb. 77 and 79 forms the 'dissonant' collections 7-31 [3, 4, 6, 7, 9, 10, 0] and 7-26 [3, 4, 6, 7, 8, 10, 0] (Ex. 3.10).[22] The collection in b.77 is 'resolved' in b. 78 by the return of the first 'consonant' chord. A similar pattern of resolution is heard between bb. 79-80. In b. 80 the vertical sonority 6-z44 [7, 8, 9, 0, 1, 4] forms a superset of the 'consonant' 5-32 chord [4, 7, 9, 0, 1], effectively 'resolving the 'dissonance' of the previous bar. The link with the pattern of alternation established in the first half of the variation is signalled by the familiar C-G fifth in the bass.

The second half of the variation presents a very different harmonic scenario. The melody is presented as a series of parallel minor triads in first inversion over a timpani pedal on C^3, falling to F^3 at the cadence (b. 86) in a clear allusion to traditional harmonic function (Ex. 3.10). The chord of 'resolution', however, is a G minor triad, the timpani F producing a conflation of G minor and Bb major, the pc-set 4-26.[23] In the present context the significance of the timpani line lies not in any traditional harmonic function, but in its complementary relationship to the melodic line above (vln 1). While the prevailing triadic string texture hinders the projection of collections through the fabric of the music as a whole, the timpani provides the pitch-classes (F - C) required to complete the chromatic in conjunction with the collection $10\text{-}5_{T6}$ projected by the melody line. Once again the familiar rhetoric of tonal function is reinterpreted in this new context.

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22 Put another way, their 'dissonance' is defined in terms of their lack of intersection with sonorities generated by the diatonic cycle (specifically sets 4-23, 5-35, 6-32, 7-35, 8-23, 9-9).

23 The combination of triadic elements in this way forms a significant part of the musical language of the Chorale movement (Chapter 5), where Schuman's initial exposure to 'polychordal' harmony through the teaching of Roy Harris is also examined.

In different ways, then, the two halves of the variation each achieve chromatic completion in the interaction between melody and accompaniment. In the first half the pitch-classes Eb and Bb heard in the second ('dissonant') string chord complement the ten-note collection formed by the melody (10-5_{T4}), a relationship mirrored in the second half by the complement relationship between timpani and melody.[24] The set data for the variation as a whole appears in Fig. 3.9.

Fig. 3.9 Pitch-class set data - Variation 2

Melodic	#3: 2, 6, 7, 9 #5: 24, 29, 35 #7: 35	#4: z15, 22, 23 #6: 33
Vertical	#3: 11 #5: 22, 32	#4: 14, 17, 18, 19, 20, 22, 26, 27, z29 #6: 31, z44, z46, z47, z49, z50
Collections (melodic)	#7: 35 #9: 9	#8: 23
Collections (total)	#7: 26, 31 #9: 9	#8: 23

'Variation 3'

The third variation (strings only, but for the last four bars) presents a clearly bi-partite texture. The melody is heard (doubled at the octave) in violins 1 and 2, while the lower strings (first 'cello only, then with the addition of violas, and finally basses) provide a bustling scalic backdrop. Ex. 3.11 illustrates the transition from the previous variation (marked by fanfare-like triads in the horns), before tracing the sequence of collections formed by the interaction of melody and accompaniment. The collections thus formed (reduced to their pitch-class content in the example) project a particular

24 A further link between the two halves of the variation may be sensed in the C major triad (held invariant between the five-note chords of the first half) and the ensuing timpani pedal C.

harmonic rhythm, characterised by passages of greater or lesser stability. The precise nature of the relationships between collections is examined in detail below.

The process of variation applied to the upper melody, meanwhile, explores the relationship between theme and accompaniment through the gradual dissolution of the Passacaglia theme into its purely diatonic components. Ex. 3.12 illustrates this dissolution, tracing the origin of the variant melody's opening motive (set 3-4) in the 'semitone plus fourth(s)' motive (a^1) from the opening bars of Theme A, followed by a descending diatonic scale pattern 6-33 [Eb, Db, C, Bb, Ab, Gb]. The paradigmatic segmentation traces the subsequent development of these elements and, from b. 105, the 'zig-zag' motive (c^1 in Ex. 3.1). It is from this point (b. 105) that the melody begins to dissolve into a series of four note segments that serve to emphasise the role of the diatonic cycle in the original Passacaglia theme. Played out against the continuing scalic accompaniment, the melody projects further extended diatonic collections, independent of those formed by the combination of melody plus accompaniment (Ex. 3.12). The opening phrases of what might be seen as two halves of the melodic line, beginning in bb. 91 and 104 respectively, each unfold extended collections through the diatonic-cycle ($7\text{-}35_{T0}$ / $8\text{-}23_{T5}$ and $8\text{-}22_{T9}$ / $9\text{-}9_{T9}$). As the melody 'dissolves' (from b.109^3) further collections hold sway ($7\text{-}35_{T11}$, $9\text{-}9_{T7}$ and, in conjunction with the final cadential figuration of bb. 117-18, $8\text{-}22_{T0i}$).[25]

While the correspondence between the melody and the accompanying collections is clearly articulated (Ex. 3.11), the process of transmutation between one collection and the next engenders the harmonic rhythm referred to above by means that are less immediately apparent. Patterns of continuity and discontinuity are established in several ways, most obviously through varying degrees of intersection between adjacent collections, but the precise nature of that intersection, in addition to more abstract patterns of pitch-class association, bears detailed scrutiny. It is through such relationships and their interaction with traditional articulative gestures that the variation projects its internal structure. Fig. 3.10 (vol. II) charts the succession of collections that unfold as the variation proceeds. The collections and levels of transposition are listed in column two, with their precise location in column three.

Dealing first with the characteristics of the collections themselves; seven-, eight- and nine-note collections generated by the diatonic cycle comprise the majority, with further collections derived from the 'gapped' diatonic-cycle (notably 4-22, 8-22 and 9-7). Two collections stand out, belonging to neither of these categories, but they are none the less closely related; 7-14 is a subset of 8-23, and 7-30 is a subset of the 'gapped' collection 8-22. Patently, all the sets featured in Fig. 3.10 (collections and invariants) are subsets of the diatonic-cycle, but a distinction is drawn between those that are themselves 'cyclic' ('gapped' or 'ungapped'), and those (marked by an asterisk) that merely form subsets of larger cyclic collections. The recurrence (bb. 118-19) of the five-note chords previously heard in the context of Variation 2 is indicative of an associative reference on a larger scale. In the present context they are subsets of both the 8-22 and 8-23 collections.

The almost constant state of transmutation between collections is illustrated by the brief duration of the majority of the collections (only five achieve double figures in terms of crotchet beats, as expressed in column three). While duration is clearly a significant factor in establishing the formal significance of a particular collection, the patterns of continuity and discontinuity under consideration here rely primarily on the extent to which sets are held invariant between collections as they adapt to the shifting melodic line, and the precise nature of that invariance. The central columns of Fig. 3.10

[25] Perhaps coincidentally, the disjunction between the collections $7\text{-}35_{T11}$ and $9\text{-}9_{T7}$ is marked by the extended collection subset $7\text{-}14_{T10}$, a set-class previously encountered in a 'cadential' role at the conclusion of the opening canon (Ex. 3.5).

register the pitch-classes of each collection. The important role played by the diatonic cycle in determining a sense of continuity between collections is highlighted by the cyclic presentation (0, 7, 2, 9, etc.) of the pitch-classes in the central column.

The extent and 'quality' of invariance between adjacent sets is recorded in column six (Invariant sets (adj)). In a number of instances adjacent collections are linked through a high degree of invariance, coalescing to form larger areas of harmonic stability (highlighted by the shading in the central column). Thus the collection 9-9_{T0}, established at the outset over the course of some forty-nine crotchet beats, is seen to transmute into a second collection, 9-7_{T10} by the interchange of only one pitch-class (7 → 11).[26] The 'gapped' cycle invariant subset 8-22_{T0} is thus heard as a constant over the opening fifty-five beats of the variation. Similarly, the diatonic hexachord 6-32_{T0} serves to link the succession 9-9_{T11} → 9-9_{T2} → 9-9_{T11} across bb. 103^6 - 107^2, and the collection 8-22_{T6} (bb. 109^5 - 109^6) is expanded to form 9-7_{T4} in bb. 110^1 -111^4 (invariant 8-22_{T6}). Such high degrees of invariance clearly contribute to a sense of continuity between adjacent collections.

Conversely, a high degree of divergence may be regarded as indicative of discontinuity.[27] The smallest representative of the diatonic-cycle (2-5) marks the first such point of discontinuity between the adjacent 7-35_{T8} and 7-35_{T9} collections either side of the barline bb. 98-99. A similar 2-5 discontinuity is heard ten bars later (bb. 108-09), marking the onset of the 7-35_{T0} collection. The 7-35_{T0} collection gives way in turn to another discontinuous collection 8-22_{T6}, with only the 'non-cyclic' (asterisked) 3-8_{T6} held invariant. Further patterns of 'low invariance' discontinuity (indicated by the

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26 In terms of the similarity relations defined by Forte (1973, pp. 46-60) the sets 9-9 and 9-7 are in the relationship Rp, R_2. They contain an invariant subset of 8 pcs, (the relationship Rp), and they also exibit "maximum similarity with respect to interval class" (the relationship R_2), but without demonstrating what Forte terms the "interchange feature" (determining the closer relationship R_1). In the present context, however, it is as the nine-note representative of the 'gapped' diatonic-cycle that 9-7 [11, 6, 1, 8, 3, 10, 5, 0, ( ), 2] derives its significance.

27 The parallel with closely and more distantly related keys is obvious here; what is missing, however, is the sense of centricity and consistent patterns of voice leading crucial to functional tonality.

dotted horizontal lines in Fig. 3.10) are heard at bb. 111-12 and (perhaps most decisively) bb. 119-20. The significance of these to the formal articulation of the music will be considered further below.

As witnessed in the previous example, less immediately tangible patterns of discontinuity may also be attributed to adjacent collections linked by invariant sets that do not exhibit the prevalent cyclic property (asterisked in Fig. 3.10). While invariant sets such as 3-8, 4-14 and 4-16 are readily identified as 'diatonic' insofar as they are subsets of the diatonic scale 7-35, they are not direct products of the diatonic cycle and 'gapped-cycle' that is characteristic of collections most closely related by invariance.[28] Similarly, the larger non-cyclic sets (5-7, 5-10, 5-14 and 6-z17) form subsets only of extended collections (in the case of 6-z17, for example, 9-7 and 9-9).

Column seven of Fig. 3.10 (Invariant sets (alt.)) draws attention to an apparently abstract relationship between alternate collections, but one that is both remarkably consistent throughout the variation, and coincident with distinctive features of melody and instrumentation. The more notable of these features are highlighted in the final column of Fig. 3.10. Examined in conjunction with those forms of continuity and discontinuity so far described, it becomes possible to observe a clear sectional structure to the variation. Alternate collections are shown to enjoy a high degree of invariance, sharing usually cycle-derived sets of five or more pitch-classes. This patterning (indicated by the horizontal (unbroken) lines in Fig. 3.10) is seen to partition the variation into seven discrete blocks (I-VII in column one) prior to the final chord in b.120. The pattern is established at the outset with the 'gapped-cycle' set $5\text{-}23_{T0}$ held invariant between the first and third collections ($9\text{-}9_{T0}$ and $8\text{-}23_{T2}$), and the set $5\text{-}29_{T2i}$ common to the second and fourth collections ($9\text{-}7_{T10}$ and $7\text{-}35_{T8}$). The interlocking of

[28] It is, of course, this very quality that determines the closeness, or otherwise, of traditional key relationships. Tonic and dominant keys, for example, hold the similarly 'cyclic' subset 6-32 invariant.

alternate collections in this way provides a further sense of cohesion to broader spans of the music, akin to a harmonic inhalation and exhalation.[29] The pattern is broken with the onset (b. 99^1) of the fifth collection ($7\text{-}35_{T9}$) which in turn forms the first collection of a similar block (Block II) defined by the alternating invariant sets $5\text{-}35_{T5}$ and $8\text{-}23_{T5}$.

The articulative function of such blocks appears to be confirmed when viewed in conjunction with other, more immediately obvious factors. In the case of Blocks I and II, the demarcation coincides not only with the low level of invariance across the barline described above (invariant set 2-5), but also with a significant change in texture with the entry of the violas (b.99). The coincidence of these various modes of articulation is not always as clear cut, but the invariant 'block' feature may be shown to contribute to the broad ebb and flow of the musical structure to a remarkable degree, often coinciding with more immediately tangible means of structural delineation, as identified in Fig. 3.10.

Returning to Block II, the cohesive effect of the alternating invariants can be seen to counteract, to some extent, the less stable relationship between adjacent collections. The first two collections ($7\text{-}35_{T9}$ and $9\text{-}9_{T5}$) cohere via the invariant $5\text{-}35_{T3}$, but the following collection ($7\text{-}35_{T11}$) is less firmly associated with its immediate predecessor (by the 'non-cyclic' invariant $4\text{-}16_{T0i}$), and the final collection ($9\text{-}7_{T8i}$) is similarly detached from its predecessor ('non-cyclic' invariant $4\text{-}14_{T7i}$). It is the sequence of invariant sets held between alternate collections that highlights the significance of the sustained (17 beat) $9\text{-}7_{T8i}$ collection that concludes the block. It is closely related to the second collection ($9\text{-}9_{T5}$) by the eight note invariant $8\text{-}23_{T5}$, whereas its relationship with the third collection ($7\text{-}35_{T11}$) is much less strong. There is, therefore, a sense of balance inherent in the distribution of collections through this, and

29 This description alludes to Hitchcock's (1988, p. 225) description of "a bellows-like ostinato figure, expanding and contracting in the bass" in the "Pastoral" section of Harris's Third Symphony. The comparison is a loose one in a technical sense, but the regular alternation of invariants noted here gives a similar impression.

subsequent blocks. Support for this reading is found in the melodic structure of the variation. The earlier analysis of the melody (Ex. 3.12) presented a two part structure, the second half marked by the decisive three minim figure (D^6 - D^5 - B^5) in b.104. Block II may now be seen to ground the final phrase of the first half of the melody on the sustained, 9-7_{T8i} collection.

The alternating invariant pattern of Block III is a literal reflection of the tripartite sequence of collections (9-9_{T11} $\rightarrow$ 9-9_{T2} $\rightarrow$ 9-9_{T11}) at this point. A feature of this passage that recurs later in the variation is the slight misalignment of collections and the gestural features of the music. In this case, the 9-9_{T11} collection anticipates the distinctive three minim motive that marks the new melodic phrase by one crotchet beat (see Ex. 3.11). Here and elsewhere, however, the shift in collection content is marked by a parallel change in the prevailing figuration; here the new collection is marked by a change in the bass line contour and the leap of a major sixth (see score, b.103^6). At the same time, the sense of discontinuity between Blocks II and III is minimised by the high degree of invariance between the final collection of Block II and the initial collection of Block III (invariant 6-32_{T0}). From this perspective, Block II is seen to flow into Block III; an example of the often complex interaction of invariant relationships in the articulation of the music.

A degree of continuity is also maintained into Block IV via the non-cyclic invariant 6-z17. The block as a whole is seen to coalesce through the interlocking sets 7-35 and 6-32 creating invariant stability between alternate collections in a manner similar to Block II. The relationship between adjacent collections is more fractured, however, indicative of the increasing intensity heard in other domains (melodic contour and dynamic level) as the climax of the variation is approached. The 'gapped' collection 9-7_{T5} yields to the 'white-note' collection 7-35_{T11}, anticipating a melodic climax on the downbeat of b. 108 (C^6, *fortissimo*). Thereafter, the low invariance instability (2-5, 3-8) that characterises the end of Block IV forms a pronounced 'white note' (7-35$_{T11}$) / 'black note' (7-35$_{T0}$) / 'white note' (8-22$_{T6}$) succession through bb. 108-09, promoting an enhanced sense of instability. This juxtaposition is reinforced melodically by the localised voice leading that sees the dotted minim C^6 (b. 108) rise to Db^6 on the first beat of b. 109, an effect promoted by the prevailing crescendo and the cambiata-like figure that mediates between the two pitches.

The ultimate goal anticipated by this quasi-cadential acceleration of the harmonic rhythm in Block IV is heard in b. 110 where the crescendo that has been operative since b. 104 climaxes (*fff*) with the entry of the double basses. The climax is marginally anticipated in the 'white-note' collection (8-22$_{T6}$) held invariant within the sustained (ten-beat) 9-7 collection that marks the onset of Block V. Block V is also coincident with the onset of the process of melodic dissolution described above in relation to Ex. 3.12. As the melodic components are reduced to their diatonic essentials, the accompanying collections reflect an ongoing state of discontinuity that is not fully resolved until the 9-9$_{T11}$ collection maintained over bb.114^1-16^6. The 9-7$_{T4}$ collection that initiates Block V engenders a sense of harmonic stability (over ten beats), but thereafter the rapid turnover of adjacent sets during the course of Blocks V and VI imparts a sense of harmonic flux. This impression is furthered by the ambiguous patterns of continuity or discontinuity engendered between collections.

Such ambiguity is most clearly expressed in the pattern of alternating invariants that have characterised the formal blocks up to this point. A pattern of non-cyclic sets (7-14$_{T7i}$ and 6-z46$_{T1}$) forms a unit highlighting the invariant relations between alternate collections (9-7$_{T4}$ and 7-14$_{T7i}$, and 7-30$_{T1}$ and 9-9$_{T0}$) in a manner familiar from previous blocks. This regular pattern is then broken at b. 113, presumably marking the onset of Block VI. However, the 9-9$_{T0}$ collection in the second half of b. 112, seen to end Block V in this reading, also enjoys an invariant relation to the Block VI collection 8-23$_{T5}$, establishing a new sequence of alternate 8-23 invariants (in parentheses in Fig. 3.10). On this basis it is also possible to read Block VI as beginning not on the first beat of b. 113, but four beats earlier with the only return to the $9\text{-}9_{T0}$ collection with which the variation began. This reading, giving structural weight to the collection established so clearly at the beginning of the variation, is clearly attractive from a harmonic perspective, and it also highlights the role played by the two non-cyclic collections spanning bb. 111-12, ($7\text{-}30_{T1}$ and $7\text{-}14_{T7i}$). These sets (each lasting no more than two crotchet beats) may be seen to 'resolve' onto the returning $9\text{-}9_{T0}$ collection, in a manner familiar in the light of the 'cadential' function ascribed to another 7-14 set at the conclusion of the opening canon (Ex. 3.5).[30]

In seeking to resolve the ambiguity surrounding these alternative readings, the contribution of metre and contour prove to be decisive. Although the latter reading appears to hold up from a theoretical perspective, there is little by way of contour, metrical placement, or other rhetorical gestures to reinforce a sense of 'return' in the presentation of the $9\text{-}9_{T0}$ collection at this point. By contrast, the initial reading placing greater store by the alternating pattern of invariants, and locating Block VI on the downbeat of b. 113, gains greater credence in the light of the change in melodic contour across bb. 112-13, the rising melodic line through b. 112 'resolving' into the falling contour of b. 113 (Ex. 3.11). Ultimately, however, the fact that neither reading presents unequivocal evidence of a formal division between Blocks V and VI simply confirms the state of flux that exists between the collectional stability enjoyed at the beginning of Block V and the onset of Block VII.

The alternative Block VI demarcation considered above, governed by the alternation of $8\text{-}23_{T11}$ and $8\text{-}23_{T5}$ invariants, would place the onset of Block VII firmly

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[30] A similar 'cadential' juxtaposition was also observed in the melodic line at this point (Ex. 3.12), the melodic line spanning bb. 111-12 outlining the collection $7\text{-}14_{T10}$.

on the downbeat of b. 117, a demarcation marked both by a change in the prevailing rhythmic patterns and the entry of the woodwind. However, the reading proposed in Fig. 3.10, is only a little less obvious in terms of its correspondence with the rhetorical gestures of the music, and it reveals an intriguing anticipation of the Variation 2 chords ($5\text{-}32_{T1i}$ and $5\text{-}32_{T4i}$) that return in bb. 118-19. Block VII begins with the prolonged $9\text{-}9_{T11}$ collection heard from the beginning of b. 114, sustained over three bars, and given additional structural weight by the anacrustic gestures that immediately precede it. A descending scale in the bass grounds the collection on E^2, forming a bass pedal for the duration of the collection, while the melodic upbeat to b. 114 comprises a succession of wide intervallic spans (including the widest such leap, E^5 - C^4), previously only heard in isolation. The $9\text{-}9_{T11}$ collection enjoys a degree of discontinuity from the preceding collection (non-cyclic invariant $5\text{-}7_{T7i}$) and significant continuity with the subsequent $9\text{-}9_{T9}$ collection (invariant $7\text{-}35_{T11}$), formed by the woodwind and strings in a crotchet rhythm that brings the continuous quaver/semiquaver motion of the variation to a halt (b.117). Additionally, as shown in the alternate invariants column, the two collections that mark the beginning of Block VII ($9\text{-}9_{T11}$ and $9\text{-}9_{T9}$) are respective supersets of the Variation 2 chords that return in bb.118-19. These chords do not appear, therefore, in isolation at the end of the variation, but are seen to emerge from the pitch-class content of the immediately preceding collections. The reappearance of the Variation 2 chords at this point is, in essence, a harmonic distillation of Block VII as a whole, and a further reflection of the pattern of alternating associated collections that breath life (an internal dynamic, or harmonic rhythm) into the variation as a whole. Only in the transition to Variation 4 is the thread of invariant connection that runs through the variation threatened. The 4-22 chord of b.120 forms a subset of the opening collection of Variation 4 ($9\text{-}9_{T1}$), but it shares only one pitch-class (4) with its Block VII predecessor.

From this highly detailed examination of pitch materials a number of points merit particular emphasis. Discrete collections deriving from both forms of the diatonic cycle ('gapped' and 'ungapped') are seen to shadow the melodic line in a manner characteristic of Schuman's melodically oriented approach. Beyond this apparently straightforward association, however, the distribution of pitch-classes through the texture as a whole is closely controlled to create an underlying harmonic rhythm, contrasting regions of relative stability and regions of comparative flux. Both the extent and quality of invariant relations between collections are seen to effect this control. Only towards the very end of the variation is any collection identified with a particular pitch centre, finally grounding the bass line on E^2 prior to the chordal transition to Variation 4. The role of similarly 'grounded' collections across the work as a whole will be considered below.

By way of conclusion, the collation of a pc-set taxonomy for the variation is a relatively straightforward process. The paradigmatic segmentation shown in Ex. 3.12 partitions the melody in several dimensions, emphasising its smallest motivic components, larger units determined by phrasing and rhythm, and finally the extended collections associated with the melody's gradual dissolution. The accompanying figuration is sufficiently undifferentiated in melodic and rhythmic terms to require only consideration of the collections presented, while the predominantly two-part texture only gives way to significant vertical sonorities in the closing bars. Invariant sets identified in Fig 3.10 are not considered to represent discrete musical formations as defined by the segmentation process, and do not therefore, feature in Fig. 3.11.

Fig. 3.11 Pitch-class set data - Variation 3

Melodic	#3: 2, 4, 5, 6, 7, 8, 9, 11 #5: z17, 23, 35 #7: 23, 35 #9: 7, 9	#4: 10, 11, 13, 14, 22, 23, 26, z29 #6: 9, 33 #8: 22, 23
Vertical	#3: 11 #5: 32	#4: 14, 20, 22, 26, z29
Collections	#7: 14, 30, 35 #9: 7, 9	#8: 22, 23

'Variation 4'

The fourth and final variation again presents the primary thematic material against a distinctive and pervasive string texture. On this occasion, however, the thematic presentation comprises a series of parallel major triads intoned by four trombones. The parallel motion of the triads (all in second inversion) ensures that they are perceived as a textural device, rather than projecting a progression in terms of traditional patterns of voice leading. A series of melodic fragments based upon the opening phrase of Theme A is presented, each clearly partitioned by rests. Ex. 3.13 traces the variation process, illustrating the relationship of each segment to the original theme, and demonstrating the high level of congruence between the paradigmatic and primary segmentations. The conclusion of the variation is approached via a distinctive octave leap and descending scalic diatonic formations that articulate closure (bb. 139-45).

The relationship between the trombone melody and the accompanying string texture is again one of diatonic congruence, this time between the trombone triads and the accompanying figuration. Ex. 3.14 illustrates the accretion of a four-part string texture over the first four bars of the variation before the entry of the trombones, and indicates the distribution of collections to be considered in greater detail below. Each string line presents essentially the same reiterative rhythmic pattern of a crotchet tied to a dotted semiquaver, followed by a semiquaver. The four lines are rhythmically staggered to produce a continuous semiquaver motion.

Ex. 3.15 presents a more detailed picture of the distribution of pitches throughout the variation. The string texture is continuous, with each pitch sustained until a new pitch appears or octave displacement occurs. The opening bars see a gradual accumulation of pitch-classes outlining familiar collections (identified by shading in Ex. 3.15). Thus the opening diatonic collection 7-35$_{T1}$ is transformed into the 'gapped' collection 8-22$_{T1}$ by the addition of Eb on the first beat of b. 122; further extensions embrace 9-9$_{T1}$, and finally 10-5$_{T11}$. More typical of the variation as a whole, however, is the gradual transmutation of one collection into another by means of common tones (pitch invariance), as witnessed in b. 124 where the original 7-35$_{T1}$ (reinstated towards the end of b. 122) gives way to 7-35$_{T11}$, via the invariant pentachord [G, D, A, E, B]. The combination of the two diatonic heptads a tone apart creates a further area of harmonic stability in the extended collection 9-9$_{T11}$.

Diatonic congruence between the trombone triads and the accompanying string texture is also indicated by means of shading in Ex. 3.15, with clear spaces in the trombone strata indicating rests. For the most of the duration of each trombone triad the string texture conforms either to the prevailing triad pitch-classes (the Gb triad in b. 126, for example) or to a seven-note diatonic collection of which the governing triad is a member.[31] This more restricted notion of congruence might perhaps be seen as a means of clarifying the relationship between the two instrumental strata in the light of a more complex texture. The maintenance of the rhythmic patterning in the string parts does, however, ensure a degree of both lag and anticipation, in a manner reminiscent of traditional harmonic practice. For example, the first trombone triad [Bb, D, F] is heard

[31] The ambiguity in this relationship is exploited, as in bb.126-27 where triads on F, C and G are all reflected in the 'white note' collection 7-35$_{T11}$ in the strings.

against accompanying figuration outlining the congruent diatonic collection $7\text{-}35_{T4}$. During the gap between this and the subsequent Gb triad, however, the 'cello and violin 2 anticipate the next congruent collection, introducing Gb and Db respectively (b. 126). The anticipation is reflected in the lighter shading associated with these pitches, representing the domain of the Gb triad. The Bbs in violin 1 and viola, however, are common to both triads and are heard to adopt their new allegiance at the onset of the new triad.

The segmentation presented in Ex. 3.15 is designed to reflect both the diatonic congruity and the 'blurred edges' that mark the shift from one triad to another. All areas of diatonic congruence are charted (dia-c), highlighting not only straightforward congruence between the prevailing triad and accompaniment, but also lengthier passages of diatonic stability formed by adjacent collections. Consider, for example, the juxtaposition of four-, five- and seven-note collections associated with the five trombone triads across bb. 130-32, subsumed by the extended collection $8\text{-}23_{T11}$.

Conversely, non-congruent areas representing particularly unstable areas of flux between collections are left blank under the 'dia-c' designation (see, for example, the lack of diatonic congruence between the trombone triad [G, B,D] and the accompanying texture in b. 134). Such non-congruent sonorities are accounted for in two ways. In the first instance a trombone triad is deemed to engage with all pitch-classes that occur between its initiation and the onset of the next triad, regardless of any intervening rests. In the case of the first triad the resulting, temporally defined, collection of pitch classes (clltn) embraces both the diatonically congruent pitches and the anticipatory Gb and Db, producing the (non-literal) triad complement 9-11. A second, equally important measure of the contrast between areas of diatonic congruence and the 'blurred edges' responsible for much of the music's harmonic impetus is found in the range of vertical sonorities formed by each successive shift in the bustling texture. All vertical sonorities are charted in Ex. 3.15 (vrt), with each resultant set-class remaining in force until it is supplanted. In the case of b. 126, for example, the extensive overlap of Db and Gb pitches (formally congruent with the Gb triad in the trombones) into the following F triad produces a succession of non-congruent vertical sonorities, 5-22 (x3) and 4-18 (x2).[32]

In the light of the segmentation presented here the 'harmonic rhythm' projected by the collections is clearly dictated by the melodic profile presented by the trombones, with dissonance, or non-congruence, occurring only at a very local level as the string texture homes in on the prevailing triad. The placement of such dissonant areas and, conversely, areas of sustained harmonic stability, is carefully controlled, however, highlighting particular aspects of the melodic line and articulating the overall structure of the variation. The variation as a whole, for example, is effectively 'framed' by stable and sustained extended collections (9-9_{T11} prior to the entry of the trombones, and 9-9_{T10} in the three bars prior to the concluding scale passage). Concerning the distribution of collections in relation to the melody, consider the opening phrase of the trombone melody outlining the 'semitone plus fifths' (motive a^1). As noted above, the sustained Bb triad that opens the trombone melody is supported by an entirely congruent accompanying texture, but a significant degree of dissonance is encountered in relation to the second chord where the Db and Gb anticipated in violin 2 and 'cello, persist into the following triad (F, A, C) for three and five semiquaver beats respectively (Ex. 3.15, b. 126). A degree of non-congruence between collections associated with the adjacent triads a semitone apart is, of course, inevitable, but the extent of the dissonance here serves to highlight the alien nature of the melodic Db in the context of the otherwise

32 The vertical sonorities marked * and † in b. 128 result from the three against two cross-rhythm formed by the crotchet triplet rhythm in the trombones at this point.

diatonic opening phrase of the melody (see Ex. 3.13). The tension inherent in the 'semitone plus fourth(s)' motive (motive a^1) might almost be seen as a motto for the articulative function played by patterns of diatonic identity and divergence throughout the work.

The pitch-class set data for Variation 4, to be examined in greater detail in Chapter 4, is presented below (Fig. 3.12).

Fig. 3.12 Pitch-class set data - Variation 4

Melodic	#3: 5, 8	#4: 14
	#5: 5, 33	#6: 17, 23, 47
	#7: 35	#8: 22
Vertical	#3: 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	#4: 5, 10, 13, 14, 17, 18, 19, 20, 22, 23, 26, 27, 29
	#5: 13, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31,35	#6: 19, 25, 26, 27, 32, 33, 34, 46
	#7: 35	
Collection	#3: 11	#4: 14, 22, 29
	#5: 20, 21, 22, 25, 27, 30, 31, 35, 38	#6: 5, 15, 26, 32, 34, 40, 43, 50
	#7: 14, 22, 24, 25, 29, 35	#8: 4, 20, 22, 23
	#9: 6, 11	
Dia-c	#3: 8, 11	#4:22, 27, 29
	#5: 20, 25, 27, 34	#6: 25, 32, 33
	#7: 35	#8: 22, 23
	#9: 9	

The examination of the Passacaglia movement presented here demonstrates the central importance of collections based upon the diatonic cycle (and the derivative 'gapped' cycle) in providing a consistent harmonic backdrop to the principal theme and subsequent variations. At a local level, patterns of continuity or discontinuity between adjacent collections are seen to create a harmonic rhythm, articulating the progress of the music within the sectional framework of the movement. Within the Passacaglia as a whole the associations drawn between collections are, for the most part, established on the basis of their pitch-class content alone; only rarely are collections further identified in terms of specific pitch centres. Indeed, it is the very lack of centricity that ensures the chameleon-like ability of the harmonic backdrop to adapt to the changing melodic line.[33]

Collections and centricity in the wider context

As a means of establishing formal associations on a larger scale, 'floating' (non-centric) collections are severely limited by their lack of clear differentiation. In contrast to traditional (centric) key relationships based upon seven-note collections, the most distantly related extended collections (for example 9-9_{T0} and 9-9_{T11}) differ by only three pitch-classes. Unless a shift from one collection to another is given a particular prominence through other means (such as metric placement, contour, register, instrumentation, or perhaps most effectively, pitch centricity), it is heard solely in terms of its immediate context, as a reflection, or shadow of the prevailing melodic line, and in relation to collections in close proximity to it. The situation was clearly illustrated in the discussion of Variation 3 (above) where the 'return' of the collection 9-9_{T0} (b. 112) was given little contextual support and achieved significance only in relation to its immediate neighbours (the brief 'cadential' collections that preceded it). Formal articulation on a broader scale was only achieved through a combination of factors including metrical placement, contour, and the 'grounding' of the collection 9-9_{T11} on a

[33] That patterns of collectional identity and difference are employed in a manner reminiscent of traditional harmonic rhythm is evident, but a clear distinction must be drawn between the associative relationships described here and the hierarchic relationships between keys that determine functional tonality. The patterns of invariant continuity running through particular passages of music may bear comparison with the concept of prolongation, representing an area of harmonic stability, but the next step, that of progression in the traditional sense, is conspicuously absent.

specific pitch (E^2). The role played by pitch centricity and collectional stability across the work as a whole forms the conclusion to this chapter.

Necessarily, such an overview must be selective, focussing only on those areas of the work that are seen to function in the wider context. In accordance with the practice established in the Passacaglia, it is through a combination of articulative devices, many with strong historical associations, that such formal landmarks are clearly signposted. Fig. 3.13 (vol. II) charts the principal areas of prominent pitch centricity and regions projecting stable collections.

Although the Passacaglia has been the subject of detailed examination already, it will be useful to revisit a number of important features in this wider context. The most prominent areas of pitch centricity are those associated with the 'Variation 2 chords' 5-32_{T1i} (on C) and 5-32_{T4i} (on Eb), designated 'α' and 'β' in Fig. 3.13. Pitch centricity was maintained in the second half of the variation by the timpani pedal C^3, which in turn gave way to the sustained F minor triad marking the onset of Variation 3 (bb. 88-90). The focus of centricity at this point is on the Ab^2 in the 'cellos that initiates the scalic bass line (Ex. 3.11). On the basis of this broader view, the return of the 'α' and 'β' chords at the end of Variation 3 may now be seen to round out a series of pitch centric associations originating in the cadential alternation of Eb minor and Db minor triads in the strings (6-33_{T1}), and the sustained Eb minor triads (with Gb in the bass) at the end of Variation 1 (Ex. 3.11).[34] What follows is a series of prominent sonorities underpinned by specific pitch centres closely associated with the 'α' and 'β' chords. The association is based upon the obvious differences manifest in the two chords, most immediately apparent in the form of the C and Eb bass triads that underpin them (Ex. 3.8), but further

[34] While centricity is most clearly displayed in terms of sustained vertical sonorities, it is worth re-emphasising Schuman's careful avoidance of root position triadic formations. In all cases, centricity is most clearly defined in terms of the bass pitch, a fact confirmed in this instance by the retension of Gb in the bass of the Eb minor and and subsequent Cb major triads (bb. 63-69). In this respect the 'α' and 'β' chords are exceptional in their foundation on root position triads. On the influence of Roy Harris and the harmonic significance of the bass pitch (as opposed to the root of the triad) see Chapter 5 (p. 166).

manifest in the A major triad that distinguishes chord 'α'. With a C major triad held invariant between them it is none the less possible to sense an inclination towards 'sharp' regions of the diatonic cycle in the case of chord 'α' and, conversely, an inclination towards 'flat' regions in the case of chord 'β'. On this basis, the association of chord 'β' with the prominent areas of centricity on the 'flat side' of the diatonic-cycle (Eb-Ab-Db-Gb) described above is clear. Less immediately apparent is a complementary 'sharp-side' association between chord 'α' and significant structural landmarks in the Passacaglia, but its 'sharp-side' association is reflected in the collection (grounded on E^2) that precedes its return in Variation 3.

The distinctions drawn here are necessarily somewhat fluid. The distinction between collections exhibiting a 'flat' or 'sharp' orientation in terms of the diatonic cycle is often a fine one, particularly in the case of large collections. However, as will become clear, the associations mapped out in Fig. 3.13 are prominently signposted, brought into focus by an emphasis upon specific, recurrent pitch-class centres, and affirmed by the consistency with which Schuman distinguishes between the 'flat' and 'sharp' orientation of these passages in terms of notation. It is on this basis that the shaded pitch-integers in Fig. 3.13 position collections in terms of their 'flat-side' (dark) of 'sharp-side' (light) orientation.[35]

Examination of similar areas of centricity across the symphony as a whole does much to substantiate this reading. The Fugue movement, into which Variation 4 leads directly, falls into three main sections, defined by Theme B, and two further variants (see Ex. 3.1). The forceful and dynamic fugal exposition (*Vigoroso*) culminates in a distinctive climax comprising a closely worked imitative passage for four trumpets, memorably described by Persichetti (Schrieber and Persichetti, 1954, p. 74) as

[35] Such metaphorical associations are difficult to avoid and should not be given undue weight. More important in the light of the ensuing discussion is the inherent mutability of the distinctions drawn. The collections depicted in Fig. 3.13 are orientated around a central G-D [7 -2] axis, but 'sharp' or 'flat' affiliation will be seen to be dependent upon a number of factors.

resembling an "electric trumpet machine" (Ex. 3.16). The scalic patterns and contours of the melodic lines in this passage emphasise the Db major scale, common to the overlapping extended collections ($8\text{-}23_{T10}$ and $9\text{-}9_{T0}$), and the pitch-classes Db - Ab, forming a strong link with the flat-side pitch centres of the Passacaglia. The passage concludes with a stark opposition of C major and Bb major triads in trumpets and strings respectively, forming a new version of the 'cadential' sonority of juxtaposed triads heard at the end of Variation 1 (now $6\text{-}33_{T7i}$) with F in the bass (b. 208.).

As the Fugue movement reaches its climax it is the 'C' centricity associated most clearly with chord 'α' that is invoked. The transition into the final section is achieved via a typically dynamic timpani solo of the type that was to become something of a trademark in Schuman's work (bb. 273-84). Of the trichord invoked [C, E, F], the pitch C^3 is given the greatest rhythmic emphasis, but the diatonic orientation of this passage in terms of the 'flat'/'sharp' axis is somewhat ambiguous (as indicated by an absence of shading in Fig. 3.13).

The predominant 'flat-side' orientation of the Fugue is reaffirmed at the climax of the movement (and of Part I of the symphony), reached in b. 328, where the collection $8\text{-}22_{T6i}$ is projected over twenty-one and a half bars, forming a backdrop to a hugely augmented presentation of thematic fragments in horns and trombones. The collection is grounded on sustained Eb pedal notes (from b. 319) that anticipate its arrival by some nine bars, with the impression of stability enhanced by an expansive reiterated triplet figuration in the woodwind. The combination of centric focus and pitch-class content provide an unequivocal 'flat-side' orientation to this passage (Fig. 3.13). By contrast, the concluding bars of the movement betray a marked sense of ambiguity and instability. The final section (*Pesante*, bb. 370-end) concludes not on an extended diatonic collection as might be expected, but on the triad complement $9\text{-}11_{T8}$ (Ex. 3.17). The musical texture is clearly stratified, with the bass outlining the 'flat-side' hexachord 6-32_{T1} [Db, Eb, F, Gb, Ab, Bb] / [5, 6, 8, 10, 1, 3] against which is heard a reiterated juxtaposition of 'sharp-side' triads (D major and B major) in the upper voices, combining to form another 'α'/'β' type chord, 5-32_{T3i} [6, 9, 11, 2, 3]. Any 'flat-side' inclination of the collection as a whole is decisively offset by the stark superimposition of opposing strata. The resolution of the dissonant elements between the two strata in the final B major triad (most noticeable between the outer voices) does little to dispel the air of unresolved tension at this point, as reflected in the unshaded representation in Fig. 3.13.

The Chorale movement that begins Part II is examined in depth in Chapter 5, but in the context of the present discussion the fifth A-E that acts as a referential centre, first in the strings, then returning in the horns towards the end of the movement, marks a clear shift away from the flat-side centres that dominated Part I (Fig. 3.13). The articulative role of collections positioned at opposite poles on the diatonic-cycle is clearly illustrated in the introductory passage for strings. The initial 'white-note' collection centred on A-E (7-35_{T11}) is thrice extended along the 'sharp-side' axis (F#-C#-G#) in bb. 10-11, before yielding to a central 'flat-side' collection 8-22_{T0} (bb. 12-15, see Ex 5.9). The white-note collection (now 6-32_{T0}) is reaffirmed from b. 15^3, along with its A-E centric focus. The 'flat-side' orientation is re-establishes in the final bars of the movement in the form of a pedal Bb forming a link between the Chorale and Toccata.

The successive entries of the Toccata theme (Theme D, Ex. 3.1) in the woodwind (on Eb, D, and Eb), highlight the maximum differentiation between diatonic collections a semitone apart, reflecting the opposite poles of the diatonic-cycle in a similar manner to the opening bars of the Chorale (Fig. 3.13). Following this 'exposition' the snare drum ostinato (a constant presence from the onset of the Toccata) transfers to timpani, (on G^2) underpinning a smooth augmentation of the Toccata theme (bb. 208-30). The prescience of the G pedal is appreciated as a meandering 'cello line effects a transition to a series of recitative-like passages in the strings that give particular prominence to 'fourths/fifths' sonorities built on C and emphasising the 'sharp' ('α') side of the diatonic cycle. Such sonorities are given particular prominence at the conclusion of the two halves of this section (each marked by a fermata). The first (bb. 272-73) generates the white-note collection $7\text{-}35_{T11}$ over the bare fifth C-G (Ex. 3.18a), while the second (bb. 309-11) extends the collection by two cycles (F# and C#) to form the collection $9\text{-}9_{T11}$, fully maximising the sonorous potential of the string ensemble (Ex. 3. 18b). This point in the music may be seen to represent a consolidation of the sharp-side sonorities and pitch centres heard throughout the work. From here on, however, it is the flat-side that regains the ascendancy.

The build-up to the climax and conclusion of the work is initiated in b. 320 (*fff*, *energico*) with the reintroduction of the Db-Ab centre on basses, tuba and contra-bassoon. This in turn heralds a greatly augmented version of Theme D (basses, low brass and woodwind) ending on a sustained Gb (bb. 347^1-350^4). A fanfare on trumpets (comprising two fourths chords, [E, A, D] and [D, G, C]) is accompanied by a final swirl of white-note scalic figuration in the woodwind, forming a brief transition to the work's peroration (bb. 351-55). There follows an extended passage of rising tension (the product of an incessant triplet based rhythmic drive and a steadily rising trumpet line) culminating in a brief, but violent timpani solo [Ab, Db, Gb] forming a counterpart to the earlier timpani passage [C, E, F] in the Fugue (Fig. 3.13). The rising trumpet line reaches its climax (Bb^5) in b. 408 over reiterated Eb minor triads (Gb again in the bass), before the work concludes with a return to the flat-side ('β') representative of the 'α'/'β' axis (Ex. 3.19). The 'β' chord is forcefully reiterated over the last eighteen bars of the movement, its bass Eb completing the reinstated 'flat-cycle' (Eb-Ab-Db-Gb) initiated by the Db-Ab dyad in b. 320.

This account of the structural geography of the symphony illustrates patterns of association on a number of 'levels'. In the very broadest terms, structure is defined in terms of the distinction between sonorities located along the 'flat' axis of the diatonic-cycle, and those associated with the 'white-note' collection and its extension along the 'sharp' axis. This potentially nebulous distinction is brought into focus by an emphasis upon specific, recurrent pitch-class centres. On the flat side the fifth Db-Ab achieves prominence as the focus of the "electric trumpet" passage in Part I, and it returns towards the conclusion of Part II, initiating an expansion of the diatonic cycle (via Gb) to embrace the Eb of the returning 'β' chord. Centric focus on the sharp-side, meanwhile, is located on the pitch-class C, associated with the 'β' chord counterpart 'α'. The expansion of the white-note collection along the sharp axis is first made explicit in Variation 3 ($9\text{-}9_{T11}$) before forming a structural counterweight to the predominant flat-side collections, most notably in the Chorale and in the central section of the Toccata. In the light of this polarisation, the inconclusive nature of the closing bars of Part I may be read not simply in terms of the perceived dissonance between the two strata, but also as a reflection of an ongoing tension reflected in the principal areas of centricity deployed throughout the work (see below).

At a more local level the juxtaposition of more or less closely related collections was seen to provide an important thread of continuity within the smaller sectional units of the Passacaglia. As noted above, however, parallels with functional tonality, while providing useful analogies up to a point, also serve to highlight the absence of a structural hierarchy of universal relations between areas of stability and/or centricity. In place of such a system, Schuman relies upon contextually defined associations inhabiting the formal archetypes and articulative gestures vacated by functional tonality. As suggested at the beginning of this chapter, such a position is redolent of the "dilemma of modernism", a desire for unity on the one hand, but also a need to shed the very system of organisation that underpinned such unities in the past.

Conclusions

Many of the techniques and characteristics of Schuman's musical language discussed above are determinedly modernist in a manner that appears to confirm his early allegiance to Stravinsky. In cutting the ties with functional tonality and adopting formal archetypes that explicitly deny opportunities for development, Schuman's approach is a radical one, particularly when viewed in comparison to more conservative American symphonists such as Howard Hanson or Randall Thomson. Schuman communicates formal relationships with admirable clarity, not least in his use of instrumental timbres (a hallmark of his later style), but the resulting juxtaposition of formal 'blocks' inevitably runs counter to the symphonic tradition. Schuman's symphonic instinct is apparent in the 'tension' between 'flat' and 'sharp' areas of structural focus, most starkly projected in the conclusion to Part I, but the artificial nature of this 'tension' is revealed, appropriately enough, in Joseph Straus's (1987, p. 148) account of similarly juxtaposed regions in Stravinsky's Sonata For Two Pianos:

> The relation between the two theme areas in Sonata for Two Pianos (in both the exposition and recapitulation) is purely associative; they are a fourth apart and the fourth is an important interval in this piece. But the F does not strive towards the C in the exposition, and the C does not strive towards the F in the recapitulation. The principal drama of the traditional sonata - polarization and eventual resolution - has thus vanished from the scene. [...] There is no polarization in the exposition (merely juxtaposition) and no resolution in the recapitulation (merely rejuxtaposition).

However, although the areas of associated stability so clearly signposted in Schuman's symphony may not project a truly symphonic argument, it is none the less clear that he displays a concern for unity and cohesion that runs counter to the modernism of fragmentation espoused by Stravinsky (Cross 1998, pp. 7-8). In addition to the 'tension' (however artificial) generated between 'flat' and 'sharp' sonorities, Schuman displays a distinctly nineteenth century concern for thematic identity and cohesion that points, ultimately, to a more conservative concern for tradition and *la grande ligne*. It becomes clear that while the musical vocabulary of extended diatonicism may owe much to Stravinsky, the compositional impulse is very different.

As suggested at the beginning of this chapter, it would seem that Schuman is faced with a distinctly American form of the "dilemma of modernism". A desire for unity and clarity of structure, a modernism of cohesion, might be seen as symptomatic of a broader trend in American culture in the 1940s and 50s. As Terry Eagleton (1996, p. 43) writes of the New Criticism in literature: "Pluralism was all very well, provided that it did not violate hierarchical order; the varied contingencies of the poem's texture could be pleasurably savoured, so long as its ruling structure remained intact." The discussions centring on the need to create a distinctively 'American' music, understood and appreciated by the public at large, that dominated sessions of the Composer's Forum Laboratory in the late 1930s envisaged a music reflective of a single, unified American society. In the words of founding 'New Critic' John Crowe Ransom, a poem (read symphony) was "like a democratic state, so to speak, which realises the ends of a state without sacrificing the personal character of its citizens".[36] Schuman's concern for formal clarity and directness of communication is manifest in the Third Symphony; what is less apparent, however, is the source of a solution to the problem of a truly symphonic dialectic. As means of preparing the ground for later analyses that deal with this issue directly, Chapter 4 subjects the pitch materials of the Passacaglia movement to scrutiny from a different perspective.

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36 Cited in Eagleton (1996, p. 43-44).

CHAPTER 4

A COMPARATIVE EXAMINATION OF GENERA MODELS (PASSACAGLIA)

The analysis of the interaction between melody and accompanying collections in the previous chapter provided a clearly defined segmentation of the opening Passacaglia movement of the Third Symphony. This segmentation now forms the raw material (a matrix of pitch-class sets) for a further consideration of the Passacaglia from the perspective of genera theory. At first sight the diatonic orientation of the movement, combined with an essentially 'architectural' approach to form, appears to present a rather unpromising subject for analysis in terms of pitch-class set relationships, particularly from a generic perspective. It must be acknowledged that later works, which demonstrate a more motivically oriented and dynamic approach to form (notably the Sixth Symphony and Ninth Symphony), will be seen to present more sharply defined generic profiles. However, the present case will, at the very least, provide a useful comparison with those later works, in addition to providing a valuable introduction to the practical application of genera theories outlined by Forte (1988b) and Parks (1989, 1998a), on a relatively large scale. In return, the resulting generic models may be seen to provide an insight into the nature of Schuman's early musical language, highlighting, for example, the role played by the diatonic cycle in generating pitch materials. An analysis from this perspective may also reveal the kernel of the later, more dynamic approach to symphonic form.

The generic theories outlined by Forte and Parks differ fundamentally in their means of construction, but they share a common aim, namely the provision of a model of pitch structure whereby relationships between discrete pitch formations within a work are revealed. It was noted in Chapter 2, however, that Forte and Parks approach the concept of pc-set genera from opposite directions. For Forte, genera provide an abstract model of the pc-set universe against which the characteristics of the musical object are assessed. For Parks, on the other hand, it is the musical object itself that is the starting point, providing the raw material on the basis of which an appropriate genus is formed.

Generic profiles for the Passacaglia movement of the Third Symphony will be constructed along both Fortean and Parksian lines. The central question to be addressed here is the extent to which these theories provide a coherent and meaningful model of pitch structure projected by the music. Regardless of whether one theory is seen to produce a better 'fit' between model and object than another, the final test of any theory is the extent to which it facilitates meaningful analytical insight. An additional, and equally important function of this initial examination of genera models, is to address a number of questions regarding the practical application of genera theory to 'real' musical objects. The issues raised are occasionally complex, and, in an attempt to minimise lengthy diversions from the central analytical narrative, such matters are treated separately as an excursus (Appendix A).

The Fortean perspective

'Canon'

With its generic models pre-established, Forte's (1988b) theory provides a logical point of departure. Tables 4.1 - 4.6 provide generic profiles of the opening canon and subsequent variations. The first stage in the production of a generic profile for a particular passage (in this case, the opening canon) involves the distribution of all the sets resulting from the segmentation (see Fig. 3.6)[1] over all twelve genera. In the majority of cases the "Rules for the Interpretation of Generic Relations" (Forte 1988b, pp. 234-35) discussed in Chapter 2 can be applied with little difficulty to produce the reduced matrix that forms the generic profile of the passage in question. It will be useful at this stage, however, to work through a particular case in order to illustrate the application of the rules and to highlight certain circumstances where the distribution of sets across the genera poses problems of interpretation. To this end Table 4.1 presents the full (uninterpreted) matrix with the left hand column indicating the rules invoked in producing the reduced matrix, which is in turn presented as Table 4.2 (below).[2]

The initial Squo calculations provide a clear generic hierarchy, with the diatonic Genus 11 (progenitors 3-7 and 3-9) achieving the highest Squo (.135) and thus accounting for all the sets in the matrix encompassed by it (Rule 1 - "Rule of Greatest Status Quotient").[3] It is immediately apparent, however, that the primary genus accounts for relatively few of the sets in the matrix (only nine out of twenty-three). Furthermore, nine sets are members of only one genus (singletons) and therefore invoke these genera as a matter of course (Rule 4 - "Rule of Singleton Extension"). Two of these are also

[1] The 'set data' used to construct each matrix will be found in Chapter 3, respectively Figs. 3.6, 3.8, 3.9, 3.11 and 3.12.

[2] Forte provides a similar exemplar (1998b, pp. 236-37). Forte's theory of generic relations is, of course, based around the set/complement principle. In other words, all the entries on the vertical axis of the matrix represent both set and complement (regardless of whether only one, or both occur in the music). Thus, for example, the hexachord 6-z26 (in Table 4.2) represents its complement 6-z48. A refinement (some might say dilution) of Forte's presentation adopted here is the indication of complements on the matrices, clarifying the presence (or absence) of specific sets. In the case of hexachords z-complement are indicated in order to ease identification. For example, the set 6-z48 is present in the opening canon, but its z-related complement, by which it would normally be represented in a Fortean matrix, is not. This distinction appears on the matrix thus (6-26)/6-48. Forte's original 'z' prefixes are omitted from all matrices for reasons of space only.

[3] The apparent redundancy in the first clause of Rule 1 should not pass without comment. The statement that the "*Rule of greatest status quotient* determines the genus with primary role, unless the representatives of that genus are a proper subset of a genus with a greater Squo, in which case Rule 2 takes effect" is puzzling. It is not possible for representatives of the genus exhibiting the "greatest status quotient" to form a subset of a genus with an *even greater* Squo. One is left to assume that Forte's "customary precision", as refered to by Jonathan Dunsby (1998, p. 180, n.3), invokes a self-fulfilling circumstance.

Table 4.1 Passacaglia: Canon bb. 1-49 (full matrix)

R of I		G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12
R3	3-2					o	o	o					
R4	3-3						o		o	o			
R3	3-4								o		o		
R4	3-5	o											
R4	3-6		o										
R1	3-7							o				o	o
R1	3/9-9											o	
R3	3-11									o	o		o
R4	4-3						o						
R4	4-11							o					
R3	4-13	o		o				o					
R4	4-14										o		
R3	4-16	o	o										
R4	4-20										o		
R1	4-22											o	o
R1	4/8-23											o	
R4	4-26												o
R3	8-27		o	o									o
R1	5-14	o	o						o			o	
R1	5-23							o			o	o	o
R1	5/7-35											o	o
R1	6-25	o	o	o				o			o	o	o
R1	6-(26)48	o	o								o	o	o
	Count:	6	6	3	0	1	3	6	3	2	7	9	9

Squo Indices

.135: G11	(dia)	.040: G2	(whole-tone)
.087: G12	(dia-tonal)	.032: G8	(atonal)
.074: G10	(atonal-tonal)	.029: G3/G6	(diminished)/(semichroma)
.058: G7	(chroma-dia)	.021: G9	(atonal-tonal)
.041: G1	(atonal)	.015: G5	(chroma)

members of the primary Genus 11 (3-9 and 4-23), while the remaining seven invoke no fewer than six further genera between them: Genus 1 (3-5), Genus 2 (3-6), Genus 6 (4-3), Genus 7 (4-11), Genus 10 (4-14 and 4-20) and Genus 12 (4-26). (The case of 3-3, also invoked by Rule 4, is considered below.)

Six sets are not accounted for by Rule 1 ("Rule of Greatest Status Quotient") or Rule 4 ("Rule of Singleton Extension"). Of these, five (3-2, 3-4, 4-13, 4-16 and 4-27) are attributed to the genus with the highest Squo of which they are members (R3 - "Rule of Completion"). This interpretation of Rule 3 assumes that Forte's reference to "the genus with the next highest Squo" applies not only to the genus occupying second place in the Squo hierarchy (G12 in this case), but also to genera further down the list until all so-called "vagrant" sets are accounted for.[4] By coincidence, in these particular cases all the genera invoked by Rule 3 have also been invoked by Rule 4. This is not so, however, in the case of the only remaining set (3-3). Rule 3 ("Rule of Completion") would attribute this set to Genus 8 as a genus marginally higher on the Squo hierarchy than the other candidates, Genus 6 and Genus 9. However, Genus 6 has already been invoked by Rule 4 ("Singleton Extension") whereas Genus 8 does not engage any other set in the matrix according to the Rules of Interpretation. It would seem logical, therefore, to attribute the set 3-3 to Genus 6 by Rule 4, rather than engage an entire Genus, previously 'dormant', on its behalf by the application of Rule 3. An excursus providing a more detailed discussion of the issues raised here may be found in Appendix A (p. 318).

Table 4.2 Passacaglia: Canon bb.1-49 (reduced matrix)

	G1	G2	G6	G7	G10	G11	G12
3-2				o			
3-3			o				
3-4					o		
3-5	o						
3-6		o					
3-7						o	
3/9-9						o	
3-11							o
4-3			o				
4-11				o			
4-13				o			
4-14					o		
4-16	o						
4-20					o		
4-22						o	
4/8-23						o	
4-26							o
8-27							o
5-14						o	
5-23						o	
5/7-35						o	
6-25						o	
6-(26)48						o	
Count:	2	1	2	3	3	9	3

Squo Indices:

(Full)

.135: G11	(dia)
.087: G12	(dia-tonal)
.074: G10	(atonal-tonal)
.058: G7	(chroma-dia)
.041: G1	(atonal)
.040: G2	(whole-tone)
.029: G6	(semichroma)

(Reduced)

.135: G11	(dia)
.032: G10	(atonal-tonal)
.029: G7/12	(chroma-dia)/(dia-tonal)
.019: G6	(semichroma)
.013: G1	(atonal)
.002: G2	(whole-tone)

[4] An interpretation similarly adopted by Kennett (1995, p. 167).

While it would be premature to draw significant analytical conclusions on the basis of a relatively small matrix, the reduced matrix (Table 4.2) does provide an opportunity to consider a further question relating to the interpretation of such profiles. The Squo calculations based upon the full matrix will, in conjunction with the Rules for Interpretation, almost invariably result in the genus with the highest Squo retaining all its sets in the reduced matrix (as here). What is not reflected in the initial Squo calculation, however, is a possible change in status of a particular genus brought about by the reduction process. To take a hypothetical example: in a reduced matrix the other genera will, according to the Rules for Interpretation, lose sets to higher ranked genera. By the process of reduction it is thus possible, indeed likely, that an originally high ranked genus will lose a large number of sets to a still higher ranked genus. By the same process it is theoretically possible, in certain circumstances, for a relatively low ranking genus to retain the majority of its sets even after reduction, thus effectively enhancing its status in comparison to the now depleted, but initially higher ranked genus. It is this potential re-orientation of the genera hierarchy that is addressed by Kennett (1995, 1998a,b), invoking a second (hereafter 'Reduced Squo') calculation. Such "second pass" Squo calculations are equally prone to statistical "skew", however, most obviously in the tendency to afford additional weight to singleton representatives of previously lowly ranked genera.[5]

In the case of the current example the initial Squo ranking (hereafter, 'Full Squo') places Genus 12 (dia-tonal) in second place behind the predominant Genus 11 (dia). It will be recalled that Forte groups these genera together to form Supragenus IV by virtue of the extent to which they intersect (see Chapter 2, Table 2.3). On this basis, and in spite of the prevalence of singletons, Supragenus IV can be seen to account for twelve of the twenty-three sets in the matrix, a situation entirely in accordance with an

[5] All of the reduced matrices in Forte (1988b) display Squo indices based upon the original full matrix (compare, for example, Tables 28 and 29, or Tables 31 and 32).

intuitive assessment of the diatonic credentials of the majority of sets encountered in the movement as a whole. The third place position of Genus 10 accords with this assessment also, representing a further extension of the harmonic vocabulary into a realm that might be described, informally, as 'not-quite diatonic'.[6] However, in the reduction process Genus 12 has retained only three of the sets originally represented in the full matrix, whereas the smaller Genus 10 (atonal-tonal) has also retained three sets. In so doing, the smaller Genus 10 would appear to have performed better than Genus 12, if the same comparative criteria are applied here that were applied in the initial Full Squo ranking. The Reduced Squo ranking reflects this situation, enhancing the status of Genus 10 above that of Genus 12.

While the logic of Kennett's "second pass" Squo is not in question, the further interpretation of reduced matrices does need to be approached with caution, particularly when (as in this case) it is undertaken in the context of a small matrix. The enhanced status of Genus 10 provides a clear illustration of the problem. Two of the three sets retained by Genus 10 are singletons; they had nowhere else to go. It might be argued, therefore, that the Reduced Squo ranking effectively compounds the "skew" towards singleton invoked genera acknowledged by Forte in his original presentation (1988b, p. 204). The issue of "second pass" Squos will be considered further in the light of subsequent matrices.

Before moving on to consider the generic profiles of the remaining variations and the movement as a whole, attention must be paid to the sets not encompassed by the 'diatonic' Supragenus IV and the 'not-quite diatonic' Genus 10. During the course of the initial examination of the pitch materials (Chapter 3), the prevalence of the diatonic cycle governing collections of various sizes became apparent. Of the remaining sets in

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[6] The provenance of the informal tags 'diatonic' and 'not-quite diatonic' used to describe (respectively) the genera of Supragenus IV (G11 and G12) and Supragenus III (G8, G9 and G10) will become clear as the analysis unfolds.

the present matrix, only 3-3, 4-3 and 5-14 bear no sub- or superset relationship with the diatonic collection 7-35 and only 4-3 is not a subset of the extended collection 8-23.[7] The reason for this spread of apparently overtly diatonic sets over a range of genera lies in the choice of trichords as progenitors of the network of inclusion relationships that form the genera. As Forte (1988b, p. 213) explains,

> [b]ecause the basis of the system of genera is not scalar, but inclusional, based upon trichordal progenitors, eight of the tetrachordal subsets of 7-35 are missing from diatonic Supragenus IV, comprising Genera 11 and 12: 4-8, 4-10, 4-11, 4-13, 4-14, 4-16, 4-20, and [4-z29].[8]

Thus while 7-35 is indeed a member of Genus 11, it also contains a number of subsets that fall by the wayside as the network of Kh relationships spreads upwards and outwards from the progenitors 3-7 and 3-9. Inevitably genera constructed in this way will tend to contain more tetrachords than trichords, and more pentachords than tetrachords, with hexachordal membership most strongly represented. That each set also represents its complement provides balanced, symmetrical genera, but music containing a large number of sets of low (or high) cardinality will inevitably engage multiple genera. As a result the set-complex about 7-35 actually engages Genera 1, 2, 3, 7, 10, 11, and 12. Clearly aware that the situation is, at least to an extent, counterintuitive Forte attempts to account for some of the apparent discrepancy by pointing out that,

[7] Regarding the set/complement principle upon which Forte's system of genera is based, see n. 2 above (p.119).

[8] In Forte (1988b, p. 213) the set 4-27 (read 4-z29) is listed in error. The misprint is only one of a number of confusing errors to be found in Forte's original presentation.

> Most of the tetrachords not in Supragenus IV (comprising Genera 10 [sic], 11, and 12) [...] are, in fact, unfamiliar as discrete components of 'diatonic' compositions [...] These sonic objects, although 'diatonic' in the sense that they are subsets of the diatonic scale, have found their destinies not in traditional tonal music, but in essentially non-tonal musics of other kinds, including for example, the atonal music of Schoenberg and Berg, and the octatonic music of Stravinsky.[9]

That Schuman's Third Symphony is clearly not "traditional tonal music" perhaps goes some way to explain the rather wide ranging generic profile exhibited in Table 4.2, but the fact remains that diatonic (as distinct from 'tonal') sonorities form the core of its pitch-class set vocabulary. In this sense, Forte's explanation appears less convincing.

'Variation 1'

The genera profile of Variation 1 (Table 4.3) also invokes 'diatonic' Supragenus IV, with Genera 11 and 12 in first and second place according to both Full and Reduced Squo calculations, and accounting for fifteen out of twenty-four sets. Of the remaining nine sets, only 4-6 and 4-17 are not subsets of the diatonic collection 7-35. The potential skewing of the generic profile by sets associated with single genera (singletons) is again in evidence here. Three genera (Gl, G9 and G10) are engaged in the reduced matrix only by singleton members. In the case of Genus 1, the sets 3-5 and 4-6 can be ascribed to no other genus, while Genus 9 survives the reduction process on the basis of only one set, the singleton 4-17. Genus 10 is represented by two singletons, 4-14 and 4-20. On this occasion the promotion of Genus 2 over Genus 10 in the Reduced Squo ranking is more easily justified, as it is represented by two singletons (3-6 and 3-8) and two further 'non-singleton' sets (4-16 and 4-z29, both also members of Genus 1). Any lingering doubts as to the analytical validity of this interpretation perhaps owe more to the nature

[9] As stated elsewhere in Forte's article, Supragenus IV comprises Genus 11 and Genus 12 only. Scc note 8 above.

of the Genus 2 sets involved (as noted above, they are all subsets of 7-35) than any statistical skew inherent in the Reduced Squo ranking.[10]

Table 4.3 Passacaglia - Variation 1[11]

	G1	G2	G9	G10	G11	G12
3-5	o					
3-6		o				
3-8		o				
3-9					o	
3-11						o
4-6	o					
4-14				o		
4-16		o				
4-17			o			
4-20				o		
4/8-22					o	
4/8-23					o	
4-26						o
4-27						o
4-29		o				
5-11					o	
5-14					o	
5-24					o	
5-27					o	
5/7-34					o	
7-35					o	
5-36					o	
6-32					o	
6-33					o	
Count:	2	4	1	2	12	3

Squo Indices:
(Full)

.172: G11	(dia)
.111: G12	(dia-tonal)
.071: G10	(atonal-tonal)
.058: G2	(whole-tone)
.053: G1	(atonal)
.041: G9	(atonal-tonal)

(Reduced)

.172: G11	(dia)
.028: G12	(dia-tonal)
.026: G2	(whole-tone)
.020: G10	(atonal-tonal)
.013: G1	(atonal)
.010: G9	(atonal-tonal)

'Variation 2'

The distribution of the thirty sets of Variation 2 (Table 4.4) across the genera is a little more clearly defined than in earlier cases. The majority of sets fall into the two Supragenera embracing Genera 8, 9 and 10 ('not-quite diatonic' Supragenus III, seven sets), and 11 and 12 ('diatonic' Supragenus IV, nineteen sets). Both Squo indices (Full and Reduced) produce the same generic ranking, with Genera 11 and 12 of Supragenus

[10] Note that in the previous genera profile (Canon), the lower ranking of Genus 2 resulted in the attribution of 4-16 to its alternative home, Genus 1.

[11] The isolated vertical sonorities of "questionable status" (bracketed in Fig. 3.8) are omitted from the matrix. Of the three sets in question, 3-3 and 3-10 also feature in Variation 4 and are therefore included in the matrix for that variation and the Passacaglia as a whole. The tetrachord 4-12, meanwhile features at no other point in the movement and plays no part in any matrix.

IV achieving an almost identical highest Squo,[12] followed by Genera 9 and 10 of Supragenus III. The reason for the concurrence lies in the distribution of singletons. Of the seven singletons in the matrix,[13] six lie within the four leading genera by the Full Squo ranking. As a result, any skew apparent in the Reduced Squo ranking serves to reinforce the initial finding.

Table 4.4 Passacaglia - Variation 2

	G2	G7	G9	G10	G11	G12
3-2		o				
3-6	o					
3-7					o	
3/9-9					o	
3-11						o
4-14				o		
4-15	o					
4-17			o			
4-18			o			
4-19			o			
4-20				o		
4-22					o	
4/8-23					o	
4-26						o
4-27						o
4-29	o					
5-22			o			
5-24					o	
7-26						o
5-29					o	
7-31						o
5-32						o
5/7-35					o	
6-(19)/44			o			
6-(24)/46					o	
6-(25)/47					o	
6-(28)/49						o
6-(29)/50						o
6-31					o	
6-33					o	
Count:	3	1	6	2	11	7

Squo Indices:

(Full)

.126: G11	(dia)
.126: G12	(dia-tonal)
.106: G9	(atonal-tonal)
.104: G3	(diminished)
.098: G10	(atonal-tonal)
.082: G2	(whole-tone)
.081: G7	(chroma-dia)

(Reduced)

.126: G11	(dia)
.059: G12	(dia-tonal)
.041: G9	(atonal-tonal)
.016: G10	(atonal-tonal)
.015: G2	(whole-tone)
.007: G7	(chroma-dia)

Comparison of the distribution of sets over the genera and their corresponding role in the music is revealing. From the discussion in Chapter 3 (p. 89), it will be

[12] While G11 and G12 exhibit the same Squo index to three significant figures, the indices are not identical (G11= .126436, G12= .125925). This fine distinction, initially invoked by Kennett (1995, p. 276), is represented here in the seperate Squo ranking. Genera with identical Squos are listed together, e.g. G11/12.

[13] They are: 3-6 (G2), 3-9 (G11), 4-14 (G10), 4-17 (G9), 4-20 (G10), 4-23 (G11) and 4-26 (G12).

recalled that Variation 2 initially projects a melodic line (in the woodwind) over two pentachords (both 5-32) before it is taken up in the strings over the timpani pedal C^3. The sets attributed to Supragenus III all result from the interaction of melody and chord/pedal in the vertical plane (see Ex. 3.10). The sets of Supragenus IV are not exclusively melodic, but it is possible to draw a distinction here between a 'diatonic' (in the Supragenus IV sense) core of melodic formations, and more transient sonorities, often resulting from vertical coincidence, engaging the 'not-quite diatonic' Supragenus III. Four sets fall outside the Supragenera discussed, engaging Genus 2 (the singleton 3-6, and the tetrachords 4-z15 and 4-z29) and Genus 7 (3-2); of these, only 4-z15 is not a subset of the diatonic collection 7-35. The diatonic credentials of the sets in Supragenera III and IV correspond less clearly when viewed in these terms. As might be anticipated, five of the seven Supragenus III sets are not subsets of 7-35. However, the distribution of 7-35 complex sets over Supragenus IV, while comprising eleven members, also includes eight non-members. Once again this apparent anomaly can be traced to the genealogy of the genera themselves. The 'non-7-35' members are all sets of cardinality 5 and 6, the point most distant from the trichordal progenitors on the generic tree of inclusion relations.

'Variation 3'

The relatively simple textures and the close relationship between melody and accompanying collections that characterise Variation 3 are reflected in a reasonably well defined generic profile (Table 4.5). The Full Squo indices ascribe thirteen of the twenty-five sets to Supragenus IV, with a further four sets attributed to Genus 10. Of the eight remaining sets, five are singletons (3-5, 3-6, 3-8, 4-10, 4-11). In the context of a relatively small matrix (twenty-five sets) two of these (4-10 and 4-11) do much to enhance the status of Genus 7 to the extent that the Reduced Squo indices promote it above Genus 12. Genus 10 is similarly promoted to second place in the Reduced Squo ranking. As in the case of Variation 1 (Table 4.3) interpretative disquiet prompted by the Reduced Squo ranking perhaps owes more to the characteristics of the sets involved, rather than any statistical bias of singleton membership. All the sets assigned to Genus 7 (chroma-dia) are subsets of 7-35, as indeed are all but five (5-14, 5-z17, 5-30, 5-32, 6-9) over the matrix as a whole.

It was noted in the commentary on the previous variation that the majority of non-Supragenus IV sets took the form of vertical formations in the music. No such distinction is discernible here as the melodic orientation of Variation 3 sees an expansion of non-Supragenus IV melodic formations emerging from the variation process (see the 'melodic' sets listed in Fig. 3.11).

Table 4.5 Passacaglia - Variation 3

	G1	G2	G7	G10	G11	G12
3-2			o			
3-4				o		
3-5	o					
3-6		o				
3/9-7					o	
3-8		o				
3/9-9					o	
3-11						o
4-10			o			
4-11			o			
4-13			o			
4-14				o		
4-20				o		
4/8-22					o	
4/8-23					o	
4-26						o
4-29	o					
7-14					o	
5-17				o		
5/7-23					o	
7-30					o	
5-32						o
5/7-35					o	
6-9					o	
6-33					o	
Count:	2	2	4	4	10	3

Squo Indices:
(Full)

.138: G11	(dia)
.089: G12	(dia-tonal)
.088: G10	(atonal-tonal)
.071: G7	(chroma-dia)
.051: G1	(atonal)
.049: G2	(whole-tone)

(Reduced)

.138: G11	(dia)
.039: G10	(atonal-tonal)
.036: G7	(chroma-dia)
.027: G12	(dia-tonal)
.013: G1	(atonal)
.012: G2	(whole-tone)

'Variation 4'

The more complex textures of Variation 4 are reflected in the greatly increased number of sets in the matrix (Table 4.6, vol. II), the majority of which (forty-six out of sixty-two) represent either vertical sonorities or collections (see Fig. 3.12 and Ex. 3.15). In view of the large number of sets involved, the resulting profile is remarkably coherent. Supragenera III and IV account for fifty of the sixty-two sets, with the remainder fairly evenly spread over an additional five genera. Of these twelve sets half are familiar trichordal and tetrachordal singletons and all but one represent vertical sonorities. The one notable exception here is the set 5-33 assigned to Genus 4. This is a melodic formation and from its distinctive position in the generic profile it might be expected to occupy a similarly distinctive position in the music, and this is indeed the case. The set is formed by the descending scale pattern that heralds the end of the variation (and of the movement as a whole) in bb. 139-44 (see Ex. 3.13). It is immediately followed by a similar descending scale figure forming the diatonic collection 7-35, creating what might be viewed as a generic 'cadence' G4 / G11. In more general terms it is the Squo indices (both Full and Reduced) that distinguish the fourth variation from its predecessors most clearly. While the majority of sets are embraced by the two diatonically oriented Supragenera III and IV, as previously, for the first time it is Genus 10 (of Supragenus III) that achieves the highest Squo and thus accounts for the highest number of sets in the matrix. This shift of emphasis is clearly heard in the music as the complexity of the texture and the frequent 'blurring' of the edges as one collection merges in to the next result in a significant increase in the number of sets falling into the 'not-quite diatonic' (or, to use Forte's tag, "atonal-tonal") category. As such this genera profile illustrates the heightened tension heard in this variation that marks the climax of the opening movement.

That the large size of this matrix may afford a more reliable generic profile is attested to by the correspondence of the Full and Reduced Squo indices. While the matrix contains no fewer than thirteen singleton representatives,[14] the preponderance of sets assigned to genera by the Full Squo ranking (rather than by virtue of singleton status) ensures that singleton invoked genera do not usurp the Full Squo hierarchy. The only change in the Reduced Squo ranking is the demotion of Genus 1 from seventh (above G7 and G8) to ninth place. As the three lowest ranking genera embrace only one (Gl and G8) or two (G7) sets any attempt to attach analytical significance to this reordering would be misguided.

Passacaglia - total

Table 4.7 (vol. II) provides a generic profile of the Passacaglia as a whole, bringing together all the sets from Tables 1-6. The seventy-two sets that make up the matrix now invoke eleven of the twelve possible genera. The predominant Supragenera III and IV account for fifty-six sets, but the large number of singletons (nine) and sets of low cardinality associated with few genera contributes to a somewhat scattered distribution. The Full Squo index confirms the role of Forte's "dia" Genus 11 at the head of the generic hierarchy, with the "atonal-tonal" Genus 10 in second place, confirming the significant role of 'not-quite diatonic' elements in the movement as a whole. As in the case of the previous large matrix (Table 4.6), the Full and Reduced Squo rankings correspond closely, with significant changes accruing only among the lower ranked genera, where singletons hold a greater sway over the total genus count after reduction.

[14] They are: 3-5, 3-6, 3-8, 3-9, 3-10, 3-12, 4-4, 4-10, 4-14, 4-17, 4-20, 4-23 and 4-26.

The interpretation of genera profiles

Statistical checks and balances

With the generic profiles of the opening canon and subsequent variations now complete, the next logical step is to compare the results from section to section, and in terms of the movement as a whole. Before doing so, however, it is important to establish the validity of such comparisons. The disproportionate influence of singleton genus members has been demonstrated above, with matrix size seen as a significant factor in determining the impact of singleton "skew". The primary concern in comparing the Full and Reduced Squo indices was the extent to which new genus hierarchies may be produced as a result of the reduction process. Of greater concern here are two further issues which are also determined to some extent by matrix size. In the first instance, to what extent may the size of a matrix predetermine the possible range of Squo indices within that particular matrix, and therefore prejudice Squo rankings in favour of large or small genera? Secondly, can Squo indices be taken as an accurate measure of genus strength (or, to use Forte's term, hegemony) when comparing matrices of different sizes? These inherent difficulties involved in interpreting generic profiles are addressed by Kennett (1998b, p. 187-88):

> [T]he problems we all face [...] are fundamentally ones of the acquiring of competency. When faced with a generic profile of a matrix whose leading genus has a squo of, say, .186, is that squo relatively high or low? Is the size of the squo more significant in this matrix when compared to the same leading genus with a squo of .105 in another matrix? By how much? Does the size of the matrix have any effect? Could the genus have performed any better in similar-sized matrices? Without the answers to these, and other questions, the potential richness of any analytical conclusions extracted from such generic data will be greatly reduced.

By way of response to these questions, Kennett provides two important statistical templates against which generic information may be compared. His Table 11 (shown here as Fig. 4.1) displays the maximum possible Squos for each genus, while the maximum possible Squos achievable by a genus in the context of matrix of a particular size are plotted as a graph (Kennett's Fig.1, upon which Fig. 4.2 is based).[15]

Fig. 4.1 Maximum possible Squos for each genus (Kennett's Table 11, 1998b, p.190)

G1		.159				
G2	.154					
G3			.222			
G4						.476
G5					.345	
G6			.222			
G7			.222			
G8				.244		
G9				.244		
G10				.244		
G11					.345	
G12			.222			

[15] On the basis of Forte's formulae for calculating squos, (the counts of a genus in the matrix divided by the total size of the matrix, then divided by the total size of the genus, multiplied by 10), Kennett (1998b, p.190) reasons that

> The result of the first calculation, of counts per matrix divided by size of matrix, can never exceed 1; therefore the maximum squo for G2 can never be greater than:
>
> 10(x/x/65) = 10(1/65) = .154

On the same basis (substituting matrix size for genus size) the maximum squo for a particular size of matrix is calculated

> For example, in a matrix of 113 set-classes, the maximum squo possible for any exhausted genus will be:
>
> 10(x/113/x) = 10(x/x/113) = 10(1/113) = .088 (to three significant figures)

Fig. 4.2 Maximum Squos by matrix size (after Kennett's Fig. 1, 1998b, p. 191)

Number of sets	Max Squo	Number of sets	Max Squo
20	0.500	80	0.125
25	0.400	85	0.118
30	0.333	90	0.111
35	0.286	95	0.105
40	0.250	100	0.100
45	0.222	105	0.095
50	0.200	110	0.091
55	0.182	115	0.087
60	0.167	120	0.083
65	0.154	125	0.080
70	0.143	130	0.077
75	0.133		

The implications of these theoretical maximum Squo indices are greatest for the interpretation of small matrices. By way of illustration, Kennett compares the performance of two genera in the context of a small (twenty set) matrix with a hypothetical maximum Squo of .500 (see Fig. 4.2). Were Genus 4 to achieve a Squo of .250 and Genus 8 a Squo of .244 Kennett (1998b, pp.189-90) notes that,

> G4 would be performing at 52.5% of its potential set-generating power to provide a squo of .250, while a squo of .244, although less than the G4 example, would mean that G8 had exhausted the matrix, and couldn't possibly perform any better.

This conclusion is based on the fact that neither genus is capable of achieving the theoretical maximum Squo of a twenty set matrix (.500). As a result the best that either can do is to achieve their own theoretical maximum; in the case of G4 this is .476, while for G8 it is .244. Thus G4 achieves 52.5% of its potential, while G8 achieves 100% of its potential. To put it another way, the 'percentage of potential' for (large) genera whose theoretical maximum Squo is smaller than that of a (small) matrix is determined in relation to the 'genus maximum' rather than the (unachievable) 'matrix maximum'.[16]

[16] The concept, originally termed "percentage of fullfillment", is first outlined in Kennett (1995, pp. 211-15). It is concerned with the performance of a genus in the context of the original (unreduced) matrix, and is calculated, therefore, on the basis of the (Full) Squo ranking.

Kennett invokes this measure to redress a perceived imbalance in the Squo indices for small matrices whereby small genera may appear to be unfairly favoured by the Squo calculation. As the above example illustrates, while G4 appeared to have performed 'better' than G8 on the basis of a direct comparison of their respective Squo indices, G8 had maximised its potential engagement with the matrix. The implication is that a direct comparison of the respective Squo indices for these genera would only be reliable in the context of a larger genus (with a correspondingly smaller maximum Squo) ensuring that both genus Squo indices were measured against the same (matrix) Squo 'ceiling'. In this particular case this would require a maximum matrix Squo not exceeding that of Genus 8 (.244), a matrix of no fewer than forty-one sets, while for a matrix containing Genus 2 (max Squo .154) the minimum matrix size would need be sixty-five sets if Squo indices were to be taken as a 'level' measure of comparative performance. (The statistical effects of matrix size on small genera are considered further in Appendix A, p. 319.) As Kennett (1998b, p. 191) concludes:

> None of these statistical imbalances should mean necessarily that Fortean generic theory, as it currently stands, is flawed in any significant way. Rather, it underlines the analytical dangers of interpreting any one statistic without reference to any other, and without at least some rudimentary awareness of the probabilistic weighting that the data contained in [Figs. 4.1 and 4.2] imply.

He goes on to point out that in order to come to terms with these issues "we need to explore the statistical world we have created in much more detail, if need be by a broad database of empirical analyses" (p. 192).

Squo indices and percentages of potential

A detailed comparison of the statistical profiles associated with each of the genera tables (presented as Fig. 4.3), may be found in Appendix A (p.321). It is on the basis of this comparative assessment of the statistical evidence, that the following, more generalised conclusions are presented.

Fig. 4.3 Squo indices and percentages of potential, Tables 4.2 - 4.7

Canon	(23 sets)		Variation 1	(24 sets)	
Squo (Full)	Squo (Reduced)	% of Potential	Squo (Full)	Squo (Reduced)	% of Potential
G11: .135	G11: .135	G12: 39.2%	G11: .172	G11: .172	G12: 50.0%
G12: .087	G10: .032	G11: 39.1%	G12: .111	G12: .028	G11: 49.9%
G10: .074	G7/12: .029	G10: 30.3%	G10: .071	G2: .026	G2: 37.7%
G7: .058	G6: .019	G7: 26.1%	G2: .058	G10: .020	G1: 33.3%
G1: .041	G1: .013	G2: 26.0%	G1: .053	G1: .013	G10: 29.1%
G2: .040	G2: .007	G1: 25.8%	G9: .041	G9: .010	G9: 16.8%
G6: .029		G6: 13.1%			

Variation 2	(30 sets)		Variation 3	(25 sets)	
Squo (Full)	Squo (Reduced)	% of Potential	Squo (Full)	Squo (Reduced)	% of Potential
G11: .126	G11: .126	G12: 56.8%	G11: .138	G11: .138	G12: 40.1%
G12: .126	G12: .052	G2: 53.2%	G12: .089	G10: .039	G11: 40.0%
G9: .106	G9: .049	G9: 43.4%	G10: .088	G7: .036	G10: 36.1%
G10: .098	G10: .016	G10: 40.2%	G7: .071	G12: .027	G1: 32.1%
G2: .082	G2: .015	G11: 37.8%	G1: .051	G1: .013	G7: 32.0%
G7: .081	G:7 .007	G7: 36.5%	G2: .049	G2: .012	G2: 31.8%

Variation 4	(62 sets)		Passacaglia	(72 sets)	
Squo (Full)	Squo (Reduced)	% of Potential	Squo (Full)	Squo (Reduced)	% of Potential
G10: .114	G10: .114	G10: 70.8%	G11: .110	G11: .110	G11: 79.1%
G11: .106	G11: .044	G11: 65.8%	G10: .108	G10: .061	G10: 77.7%
G12: .104	G12: .029	G12: 64.6%	G12: .108	G12: .031	G12: 77.7%
G9: .094	G9: .016	G9: 58.4%	G9: .098	G9: .014	G9: 70.5%
G4: .092	G4: .015	G4: 57.1%	G3: .093	G1/4: .013	G3: 66.9%
G2: .087	G2: .012	G2: 56.5%	G1: .088	G7: .009	G1: 63.3%
G1: .084	G7: .007	G1: 52.8%	G4: .086	G3: .006	G4: 61.9%
G7: .082	G8: .004	G7: 50.9%	G2: .085	G2: .004	G2: 61.1%
G8: .079	G1: .003	G8: 49.1%	G7: .083	G8: .003	G7: 59.7%
			G8: .078	G6: .003	G8: 56.1%
			G6: .068		G6: 48.9%

A number of clear trends may be observed from the 'sum' of the information contained in Fig 4.3. The most consistent findings appear to be those represented by the Full Squo indices (a situation due, at least in part to the fact that no statistical imbalances as extreme as those invoked by Kennett are encountered). In the case of the Canon and Variations 1-3 these rankings each prioritise Genera 11 and 12. In the case of

Variation 4, Genus 10 is prioritised above Genera 11 and 12, and this genus also features more prominently in the profile of the movement as a whole (albeit with an identical Squo to Genus 12 to three decimal places). These findings are supported by the Reduced Squo rankings with the exception of the Canon, where Genus 10 is promoted above Genus 12 into second place. The 'percentage of potential' statistics occasionally highlight notable discrepancies between the realised potential of a genus and the extent of genus/matrix correspondence (the Squo ranking) upon which Forte's "Rules of Interpretation" are promulgated. The enhanced status of Genus 12 in the Canon, and Variation 1-3 profiles, for example, serves to reinforce the priority of Supragenus IV indicated by the Full Squo rankings. In the case of Variation 2, on the other hand, the percentage of potential was shown to be a less accurate reflection of the generic character of the passage in question (see Appendix A). That the explanation was sought in characteristics of specific sets and their distribution over the full matrix only serves to confirm the necessity of the interpretative human interface between 'object' and 'model'.[17]

Conclusions

Most importantly, this balanced interpretation of the generic data serves highlight a number of significant characteristics of the music under consideration. The consistent presence of Genera 11, 12 and 10 is entirely in accord with an appreciation of the ongoing tensions and fluctuations between 'diatonic' and 'not-quite diatonic' sonorities that articulate the bar-by-bar, beat-by-beat, progress of the music. Following directly from this observation is the fact that no one section of the Passacaglia differs markedly from any other in terms of its generic profile. A contrasting texture may throw

[17] A similar justification was employed in accounting for the enhanced Reduced Squo of Genus 2 in relation to Variation 1. Here too the 'usual suspects' (sets attributable to only one or two genera) were held responsible for the statistical skew.

more emphasis upon the vertical dimension (as in the case of Variation 2), or the level of 'surface tension' may increase (as in the case of Variation 4), but these fluctuations are extremely localised. As demonstrated in the previous chapter, virtually all the 'not-quite diatonic' sonorities are the result of localised overlapping of diatonic collections, or more overtly 'cadential' figures, such as the scalic 5-33 discussed in relation to Variation 4. Such generic oppositions are not employed to articulate large-scale formal structure. In this broader sense the form is, as noted at the beginning of this chapter, static or, to recall Dahlhaus's term "architectural",[18] as opposed to the more "dynamic" forms to be encountered in Schuman's later symphonies where large-scale structural tensions (a more truly symphonic dialectic) are established in generic terms.

The Fortean model of generic relations has clearly provided a useful model of pitch structure for this passage, enabling coherent trends and associations to be identified across the five discrete sections of the Passacaglia. By projecting the music against this predetermined system of genera relations it should also be possible to make comparisons between this and other works encountered as Schuman's compositional approach develops. To this extent Forte's model is clearly a valuable analytical tool. But there is also, undeniably, a sense in which the Fortean model seems less than satisfactory in relation to this music, most obviously in terms of the rather diffuse generic profiles produced. While the possibility that this is merely an accurate reflection of an eclectic collection of pitch materials cannot be discounted entirely at this stage, there is an intuitive sense of mismatch between model and object. As noted above, the spread of sets across multiple genera is most apparent in the small matrices where no single genus accounts for more than 50% of the sets in a matrix, but the problem is most acute in the matrix for the Passacaglia as a whole, where the leading genus (G11)

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[18] See Chapter 2, p. 46.

accounts for a mere 31.9% of the matrix, and eleven of the twelve genera are invoked to account for all the sets in the matrix (Fig. 4.4).

Fig. 4.4 Percentage of sets engaged by leading genera

	Canon	Var 1	Var 2	Var 3	Var 4	Total
Leading Genus	G11 39.1%	G11 50%	G11 36.7%	G11 40%	G10 46.8%	G11 31.9%
Supragenera III/IV	65.2%	75%	86.7%	68%	80.6%	77.8%

Obviously the generative power of the Supragenera ensure more effective coverage, with the two leading Supragenera combining to account for over 86% of sets in one case (significantly, Variation 2), and 77.8% of sets overall. But even here it is impossible to account for the sets that fall outside this realm as simply anomalous, or as representing a discrete collection of 'dissonant' sonorities. In the case of the large passacaglia matrix, sixteen sets fall outside the 'diatonic' and 'not-quite diatonic' realm of Supragenera III and IV, yet all but five of these are subsets of the diatonic collection 7-35, three more are subsets of the extended collection 8-23 and the remainder are embraced by the further extended collection 9-9 (Table 4.8).[19] Whilst intuitively attractive, the case for a 'diatonic'/'not-quite diatonic' duality, represented by Supragenera III and IV, is undermined by this discrepancy.

The cause of this perceived mismatch was discussed above in relation to the opening canon (Table 4.2). That all but one of the 'rogue' sets listed here are trichords or tetrachords would appear to signify that a generative model of pitch relations based on trichordal progenitors is inappropriate in this case. That the complement relationship between sets is also enjoyed by relatively few sets is further evidence of the inherent tension between model and object. All the sets of cardinality 7, 8 and 9 find their complements in the music,[20] but relatively few small sets are similarly mirrored. Of the

[19] At the same time it must also be noted that a number of sets not usually associated with the diatonic realm are embraced by Forte's 'dia' and 'dia-tonal' Genera.

[20] With one exception, the set 8-4 is represented by the designation 4-4 in Table 4.6, whereas the set 4-4 appears at no point during the music.

Table 4.8 'Rogue' sets embraced by diatonic collections

	7-35	8-23	9-9
3-2	o	o	o
3-5	o	o	o
3-6	o	o	o
3-8	o	o	o
3-10	o	o	o
3-12			o
4-3			o
4-5		o	o
4-6		o	o
4-10	o	o	o
4-11	o	o	o
4-13	o	o	o
4-15		o	o
4-16	o	o	o
4-29	o	o	o
6-33	o	o	o
(16 sets)	11	14	16

'rogue' sets, for example, only 3-6 finds its complement expressed in the music.[21] From this perspective the extent to which the genera model 'fits' the music in question is not immediately apparent from the matrices and Squo indices. No distinction is made between a matrix entry representing a single set and one representing both set and complement. It has been suggested that, in this respect, Forte's system is a reflection of the characteristics inherent in the repertoire for which pitch-class set analysis was originally designed, namely the atonal works from the early years of this century.[22] It may prove to be the case that different approaches to genera theory are more or less suited to particular repertoires. The analyses of Schuman's later works in this study may form a contribution to this debate. With this issue partly in mind, the Passacaglia movement will now be examined through the other end of the 'generic microscope', from the perspective of Richard Parks's model of pitch-class set genera.

21 A Variation 4 collection, see Fig. 3.12.
22 See, for example, Kennett (1995, pp. 169-70), and, rather more obliquely, Parks in a contribution to the discussion in Forte (1998a, p. 233).

A Parksian model

In view of the overall similarity expressed by the genera profiles of the various subsections of the Passacaglia, the following examination of the music from a Parksian perspective will concentrate upon establishing a single genus to embrace the sonic identity of the movement as a whole. This is not to say that such a genus will have nothing to say about the internal dynamics of the music, but is merely to acknowledge the relatively insignificant role played by genera relations in articulating larger structural divisions between the canon and subsequent variations.

Isolation of potential cynosures

It will be recalled that Parks (1998a, p. 207)[23] defines the "primary members" of a simple genus (that is, a genus generated from a single cynosural set) as "those scs [set classes] that are either subsets or supersets of the cynosural sc [set class] [...] [a] definition only slightly less restrictive than Forte's set-complex K".[24] As a preliminary step in establishing a suitable genus (simple or complex) Tables 4.9-4.15 (vol. II) list all the inclusion relationships for Passacaglia sets of cardinal 3 to 9. Each table presents the sets of the cardinality in question along the top (horizontal axis), while the vertical axis lists all the sets with which inclusion relationships could be formed. With sets now represented only by themselves (as opposed to their complements) the vertical axis includes all sets of cardinalities other than that of the potential cynosural (horizontal axis) sets, which are omitted to facilitate a reasonably compact presentation. Taking Table 4.9 as an example, inclusion relationships are indicated as follows: the

23 Unless otherwise stated, all further references to Parks are from this source.

24 With the exception of sets associated with genera by virtue of the Z-relation (termed "ancillary members" (p. 209)), which have little bearing on the current analysis, the concept of the 'set complex' and the (Parksian) 'simple genus' are interchangeable. The "cynosure" is simply the set about which the set-complex is formed.

designation k+ indicates an inclusion relationship between the potential cynosure and the respective set, conversely the designation k- indicates an inclusion relationship between the potential cynosure and the (absent) complement of that set.[25] Thus in Table 4.9, 3-2 is a subset of 8-4 (k+), but it is not a subset of 4-5, only of its complement 8-5 which plays no part in the music (k-). In the present context all k- relations are null relations, and thus register zero in the tally of inclusion relationships at the foot of each table; they are included for the sake of completeness only. The relationship between the potential cynosure and itself is assumed (due to the omission of sets of like cardinality from the vertical axis) and included in the Kh/C total at the foot of the table. Where a potential cynosural set enjoys inclusion with itself and its complement (a Kh relationship), and therefore appears on the vertical axis, it is designated C, registering two counts in the Kh/C total (for example, 3-6/9-6). Forte's original designations Kh and k* (effectively a hexachordal k+) have been retained and retain their original meanings. On this basis, the designation Kh can indicate either a single inclusion relationship, where one of the complementary pair is not present in the music (as in the case of 3-2/4-3, which registers a count of one in the Kh/C total), or two such relationships where both set and complement are present (thus 3-2 is a subset of both 5-23 and 7-23, registering two counts in the total). The total number of inclusion relationships enjoyed by each set (the sum of Kh/C and k+/k*) is collated in Table 4.16 (vol. II).

In assessing the suitability of each set as a potential cynosural 'nexus' a number of factors come to bear. The essential criteria are defined by Parks' four "preference rules" (p. 211) cited in Chapter 2. For convenience they are reiterated here:

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[25] The terms k+, k– and C used here build upon the work of Kennett (1995). Kennett employs the term 'Kd' for simple inclusion relationships (k+) and the designation 'P' ('Parent') for cynosural sets ('C').

1. Prefer those genera that contain as members as many as possible (ideally, all) of the scs represented in the musical object that is the subject of investigation. Then, in no particular order of precedence:

2. Prefer that genus whose primary members or characteristic members embrace the largest number of scs from the musical object.

3. Prefer that genus which contains the smallest number of members or which contains the smallest number of primary members.

4. Prefer that genus whose cynosural and member scs evince the greatest similarity to familiar pitch constructs.

In general terms, these rules are concerned with two aspects of the interface between generic model and musical object. Rules 1 and 3 are concerned with the 'fit', or the extent of the correspondence between the sets of object and model. Rule 1 requires (ideally) that any genus should include all sets from the model, while Rule 3 attempts to impose a limit upon genus size in order to render the comparison of model and object analytically meaningful in some way. (Clearly a 'one genus fits all' approach would be less than informative.) Rules 2 and 4, meanwhile, might be described as addressing the issue of the 'quality' of correspondence between model and object. Rule 2 ensures a high degree of correspondence between "primary" and "characteristic" genus members and object sets, while Rule 4 is concerned to establish links between primary and characteristic genus members and pitch formations that achieve a degree of prominence in the music under examination.

Considering the rules in this order, Rule 1 is most readily interpreted in terms of the percentage of the matrix embraced by each potential cynosural set, shown in Table 4.16. Although the requirement of Rule 1 is straightforward (that the resulting genus should embrace as much of the matrix as possible), the choice of possible cynosural sets is determined to some extent by the distribution of cardinalities across the matrix. In the present case, for example, sets of cardinal 8 are in a better position to embrace the matrix as a whole, as there are only five cardinal 8 sets. Each octad is only denied the potential of an inclusion relationship with the remaining four cardinal 8 sets. Sets of cardinal 4, by contrast, are denied engagement with seventeen further sets of cardinal 4. In the initial assessment of potential cynosural sets that follows, therefore, each set will be examined in relation only to those sets with which it could (theoretically) engage. For example, in the case of cardinal 3 sets there are eighty-five such sets (the ninety-five of the full matrix, less the eleven sets of cardinal 3, but including the cynosural set itself). The elimination of the inevitable distortion brought about in comparing sets excluded from relations with varying proportions of the matrix, will enable underlying trends within cardinalities to be more easily observed. A somewhat different, but no less significant problem surrounds any cynosural hexachords as they are (of course) unable to enjoy any inclusion relationships with their own complements, a possibility enjoyed by all other cardinalities. Viewed in these simple percentage terms, the results inevitably favour those sets producing the largest genera (set-complexes). The set-complexes about 9-7 (158 sets) and 9-11 (156 sets) clearly lead the field in terms of the requirements of Rule 1, each embracing 96.7% of the matrix (Table 4.16). In terms of Rule 3, however, their excessive size (they exceed the matrix size by 39.9% and 39.1% respectively) militates against them.

The problems that arise in assessing the degree of correspondence between model and object (thereby addressing Rules 1 *and* 3) are essentially the same as those encountered above in relation to Forte's system of genera. As before, the difficulty lies in achieving meaningful comparisons between genera of widely differing sizes (the largest under consideration here is the complex about either 3-7 or 9-7, with 158 member sets, while the smallest is that about 6-32, with only thirty-three member sets). In contrast to a number of the previous examples, where small matrices tended to enhance the Squo status of small genera, the large size of a number of genera to be considered here imposes the opposite statistical 'skew' in relation to the percentage of potential measure (see Appendix A: Statistical checks and balances). Assuming that the possibility of such imbalances is kept in view, the principle of the Squo and percentage of potential may still be employed to facilitate such comparisons.[26] Table 4.17 presents a comparison of the three highest ranked sets for each cardinality in terms of the percentage of the matrix embraced (Preference Rule 1), and the Squo and percentage of potential rankings (Preference Rule 3). However, an additional demand is imposed by Parks in the form of Preference Rule 4, namely that the cynosural set should "evince the greatest similarity to familiar pitch constructs". In an attempt to establish an empirical assessment of the "familiarity" demonstrated by potential cynosures Table 4.17 also lists those sets that demonstrate: a) particular prominence in terms of presentation, and/or, b) regular presentation (familiarity) across all sections of the Passacaglia. The five sections of the Passacaglia are designated C (Canon) and (Variations) 1, 2, 3, 4. Three superscript designations define the presentation of the set further: c (collection), v (vertical) and m (melodic) in accordance with the 'set data' in Chapter 3.

From the information presented in Table 4.17 it is possible to form a balanced assessment of these set complexes as potential generic models of the Passacaglia. A notable feature of this process is its more empirical nature, in comparison to the process of reduction undertaken in the context of Forte's genera. For example, while the assessment of saliency provided here is subjective to a degree, it provides a clear enough picture of the profile of potential cynosural sets in the music to tip the balance in one direction or the other in many cases where the statistical measures are equivocal. It is precisely this process of empirical assessment that Parks alludes to in his comparison of the two genera theories (p. 213). Having released the cascade of potential genera from the closet in the form of Tables 4.9-4.15, Table 4.17 represents a considerable filtering of the possibilities - a process completed below.

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[26] As in the case of Fortean genera, the extrapolation of these concepts follows Kennett (1995, particularly Chapter 5).

Table 4.17 Potential cynosural sets: Squo, % of potential and saliency rankings

Set	% of matrix	Set	Squo	Set	% of potential	Set	Saliency
3-11	87.1	3-11	.056	3-11	87.5	3-11	$C^{mv}\ 1^{mv}\ 2^{v}\ 3^{mv}\ 4^{vc}$
3-7	77.6	3-9	.050	3-7	77.8	3-9	$C^{mv}\ 1^{m}\ 2^{m}\ 2^{m}\ 4^{v}$
3-5	75.3	3-7	.049	3-5	75.0	3-6	$C^{v}\ 1^{v}\ 2^{m}\ 3^{m}\ 4^{v}$
						3-7	$C^{mv}\ 2^{m}\ 3^{m}\ 4^{v}$
						3-5	$C^{m}\ 1^{m}\ 3^{m}\ 4^{mv}$
4-27	60.3	4-26	.061	4-z29	61.2	4-22	$C^{v}\ 1^{mv}\ 2^{mv}\ 3^{mv}\ 4^{vc}$
4-z29	60.3	4-27	.056	4-27	60.2	4-14	$C^{v}\ 1^{v}\ 2^{v}\ 3^{mv}\ 4^{mvc}$
4-14	56.4	4-14	.053	4-14	57.0	4-26	$C^{mv}\ 1^{v}\ 2^{v}\ 3^{mv}\ 4^{v}$
						4-23	$C^{v}\ 1^{m}\ 2^{m}\ 3^{m}\ 4^{v}$
						4-z29	$1^{v}\ 2^{v}\ 3^{mv}\ 4^{vc}$
						4-27	$1^{v}\ 2^{v}\ 4^{vc}$
5-32	47.9	5-35	.085	5-35	60.7	5-35	$C^{m}\ 2^{m}\ 3^{m}\ 4^{vc}$
5-24	47.9	5-32	.071	5-32	50.7	5-24	$1^{c}\ 2^{m}\ 4^{v}$
5-25	47.9	5-34	.070	5-25	50.7	5-23	$C^{m}\ 3^{m}\ 4^{v}$
						5-32	$2^{v}\ 3^{v}$
						5-25	4^{vc}
						5-34	4^{c}
6-33	52.0	6-32	.105	6-32	78.9	6-33	$1^{v}\ 2^{m}\ 3^{m}\ 4^{vc}$
6-z47	52.0	6-33	.098	6-33	73.7	6-32	$1^{c}\ 4^{vc}$
6-31	50.7	6-z47	.090	6-z47	66.9	6-z47	$2^{v}\ 4^{m}$
						6-31	2^{v}
7-23	61.2	7-35	.107	7-35	90.7	7-35	$C^{c}\ 1^{c}\ 2^{mc}\ 3^{mc}\ 4^{mvc}$
7-29	60.0	7-34	.098	7-34	83.1	7-23	3^{m}
7-30	57.6	7-23	.094	7-23	79.7	7-29	4^{c}
						7-30	3^{c}
						7-34	1^{c}
8-22	81.3	8-23	.087	8-22	81.1	8-23	$C^{c}\ 1^{c}\ 2^{c}\ 3^{mc}\ 4^{c}$
8-27	81.3	8-22	.077	8-27	80.6	8-22	$1^{m}\ 3^{mc}\ 4^{mc}$
8-4	64.8	8-27	.075	8-23	79.1	8-27	C^{c}
						8-4	4^{c}
9-7	96.7	9-9	.068	9-7	98.4	9-9	$C^{c}\ 2^{c}\ 3^{mc}\ 4^{c}$
9-11	96.7	9-6	.063	9-11	96.8	9-6	4^{c}
9-9	87.0	9-11	.062	9-9	87.2	9-7	3^{c}
						9-11	4^{c}

The respective claims of potential cynosures listed in Table 4.17 may be summarised as follows (the more detailed appraisal, upon which this summary is based may be found in Appendix A, p. 326). While the triad (3-11) is the leading trichordal complex in terms of engagement with the matrix it is difficult to see it as a cynosural set for the movement as a whole on account of its large size (156 sets) and the prevailing influence of the diatonic cycle upon larger cardinalities. Similarly, the profile for tetrachordal complexes is confused, with no single complex emerging to stake a cynosural claim.[27] In terms of Squo and percentage of potential rankings the diatonic cycle is strongly represented in cardinalities 5, 6 and 7, with 'diatonic' and closely related sets exceeding their nearest rivals by a significant margin. A similar situation pertains among the octads with 8-22 and 8-23 each staking a claim in terms of Rules 1 and 3 respectively.

The statistical assessment of potential cynosural sets has, up to this point, insulated them from their inability to embrace sets of their own cardinality. Even when favoured in this way, however, with the exception of the trichords, sets of cardinality smaller than eight fare poorly in terms of their engagement with eligible sets. Faced with the matrix of the movement as a whole, this fact, combined with the large number of small sets and the comparatively small number of large sets, clearly tips the balance in favour of a high cardinality cynosure, generating a genus from the 'top down'. While diatonic cycle collections are strongly engaged by the matrix, the arrangement is by no means reciprocal. In order to fulfil the obligations of preference Rule 1, it is clear that a projected genus must reflect both 'diatonic' and 'not-quite diatonic' characteristics of the music. Park's theory allows for just this eventuality in the concept of the "complex genus" whereby more than one cynosural set may combine to generate the genus model.

Formation of a complex genus

No less than in the case of a simple (single cynosure) genus, the process of selection is an empirical one, guided by the Preference Rules. An indication of potential cynosural candidates, in relation to the entire matrix of ninety-five sets, and reflecting the 'diatonic' and 'not-quite diatonic' characteristics of the music, is presented in Table 4.18 (vol. II). In terms of effective coverage of a large number of sets the set-complex

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[27] Note, however, that all tetrachords achieving a position in Table 4.17 are subsets of either 6-32 or 7-35, suggesting that they may form a subset of a more clearly defined diatonic genus. The same may be said of the trichords represented in Table 4.17, all of which form subsets of the diatonic hexachord 6-32, with the exception of 3-5, a subset of 7-35.

about the 'not-quite diatonic' 8-22 engages all trichords and tetrachords and more of the larger sets than any other candidate, with the exception of 9-9, whose candidature is severely compromised by its large complex size. The prospect of combining the Genus 8-22 with one emanating from a low cardinality cynosure, thereby engaging more sets of cardinal 7 and 8 is attractive, but it is offset by the large number of redundant sets (not present in the matrix) that each candidate brings in its wake (Rule 3). From the 'diatonic' perspective Genus 7-35 only contributes one additional set (8-23), but the extended collection 8-23 does account for an additional five sets not engaged by 8-22 alone, while the extent of overlap between the two complexes ensures reasonable compliance with Rule 3.[28] A comparison of potential complex genera reflecting both the 'diatonic' and 'not-quite diatonic' characteristics of the matrix can be seen in Table 4.19.

Table 4.19 Engagement of Passacaglia matrix by potential complex genera

Genus	Sets engaged (/95)	Genus size	Squo	% of potential
8-22/8-23	79	115	.072	83.7
9-9/8-22	83	131	.067	88.2
8-22/4-23	81	148	.058	85.3
8-23/4-22	73	148	.052	76.5
9-9/4-22	88	180	.051	91.1

All the genera considered here exceed the matrix in size, resulting in high, and potentially misleading, percentage of potential scores. A more accurate assessment, taking account of both Rules 1 and 3, is provided by the Squo, where in spite of the fact that it embraces less of the matrix than larger genera, the Genus 8-22/8-23 provides the closest correspondence between model and object. This can be sensed in purely

[28] A not dis-similar situation is encountered in Parks (1989) regarding the 8-17/18/19 complex genus. The prospect of a complex genus emanating from two or more cynosures with very different set-complexes is not ruled out by Parks. In prefering "that genus which contains the smallest number of members *or which contains the smallest number of primary members*" [my emphasis] Rule 3 specifically allows for a combination of set complexes that intersect by only a small margin. The value of this provision is more likely to be felt when modelling music projecting sharply contrasting sonorities.

numerical terms by comparing the Genera 8-22/8-23 and 9-9/8-22. Although Genus 9-9/8-22 accounts for a further four sets, it brings with it an additional sixteen sets that have no bearing on the music. Moreover, the complex genus providing the most comprehensive coverage (9-9/4-22) is almost twice the size of the matrix itself (180 sets).

In adopting the 8-22/8-23 model for the Passacaglia the more qualitative aspects of Parks's Preference Rule 2 also need to be addressed. Rule 2 prefers "that genus whose primary members or characteristic members embrace the largest number of scs from the musical object". The Genus 8-22/8-23 and its constituent "primary" and "secondary" members is displayed in Table 4.20 (vol. II). With shaded members representing the intersection of the genus with the matrix, it becomes clear that the core of primary sets (those common to both the 8-22 and 8-23 complexes) is closely engaged by the matrix (fifty-two of the sixty-two members).[29] At a glance it is also possible to observe that those primary members not found in the music tend to exhibit characteristics not readily associated with the prevailing diatonic orientation of the genus, for example, the highly chromatic sets 3-1, 4-1 and 5-2, and the whole-tone tetrachord 4-21. This observation will be considered more formally below, in the context of the "characteristic" sets of the genus. With exception of the cynosures themselves, the secondary sets are less closely engaged, but none the less account for a further twenty-seven sets associated with one or other of the cynosures.

Before moving on to consider the "characteristic sets" of the genus, those sets not embraced by the model must be accounted for. These sets fall into two distinct categories, those not embraced by the Genus 8-22/8-23, but none the less related by inclusion to sets closely associated with it (Table 4.21), and those sets that appear truly

[29] Note that in spite of their defining (cynosural) role in the genus, the sets 8-22 and 8-23 are not primary members as they are not subsets or supersets of each other. See, for example, Parks's Table 5 Complex genus 6-35/7-22 (1998a, p. 218).

'anomalous', bearing no relation to any potential genus considered thus far (Table 4.22).

Table 4.21 Sets not engaged by Genus 8-22/23

Set	Saliency	Location		Alternative allegiance
8-27	C^{c}	b.17-18	(Ex.3.3b)	4-22, 4-23, 5-35, 6-33
7-26	2^{c}	b.79	(Ex.3.10)	4-22
6-z44	2^{v}	b.80	(Ex.3.10)	9-9
5-22	2^{v}, 4^{vc}	bb.80, 134	(Exs.3.10, 3.15)	9-9
6-z17	4^{m}	bb.128-29	(Ex.3.13)	9-9
7-25	4^{c}	b.128	(Ex.3.15)	4-22, 4-23, 5-35, 6-33
8-4	4^{c}	b.129	(Ex.3.15)	4-22, 4-23
6-5	4^{c}	b.135	(Ex.3.15)	9-9
8-20	4^{c}	b.137	(Ex.3.15)	4-22, 4-23, 5-35, 6-32

With only one exception, all the sets listed in Table 4.21 are isolated examples, occurring only once, usually in the form of a vertical sonority, or as a transitory collection. The precise location of each set can be identified in the appropriate musical example (Chapter 3). The collection 8-27, it will be recalled, resulted from the extremely localised pattern of voice leading resulting from the registral placement of the contrapuntal voices above the third entry of Theme A, described in the previous chapter (Ex. 3.3b). The collection 7-26 marks the melodic climax of the woodwind melody that forms the first half of Variation 2, immediately followed by the vertical presentation of the hexachord 6-z44, marking the momentary point of overlap as the string dominated second half of the variation commences. (The pentachord 5-22 forms a subcomponent (strings and timpani) of the same sonority.) The sole melodic formation (6-z17) occurs in Variation 4; a subset of the extended diatonic collection 9-9, it nevertheless marks a melodic far point in the variation process. The remaining collections can all be traced to the characteristic 'blurred edges' as the stable collections of Variation 4 merge, one into another. Each of these sonorities falls outside the proposed Genus 8-22/8-23, but they are related by inclusion to sets to primary members of the genus, albeit that some of these relations are closer than others.[30] The extent to which these primary members may also prove to be "characteristic" of the genus is discussed below.

The remaining sets in the matrix falling outside the purview of the Genus 8-22/8-23 enjoy no inclusion relations with the potential cynosures considered in Table 4.18. A more distant category of sets, they are related by inclusion to a variety of primary genus members, but notably absent from this list are sets that might be seen as characteristic of the genus. Once again, these sets are, with one exception, isolated sonorities attributable to the vertical coincidence of part writing (Table 4.22).

Table 4.22 Sets not engaged by any proposed genus

Set	Saliency	Location		'Primary' member association[31]
6-z49	2^{v}	b.77	(Ex.3.10)	4-15,17,18,26,27,29 5-32 9-7
7-31	2^{c}	b.77	(Ex.3.10)	4-10,13,15,17,18,26,27,29 5-25,32 9-7
6-z19	4^{v}	b.128 (x2), b.129	(Ex.3.15)	4-8,14,16,17,18,20,29 5-20 9-7
6-27	4^{v}	b.128	(Ex.3.15)	4-10,13,15,17,18,26,27,29 5-25,32 9-7
7-22	4^{c}	b.128	(Ex.3.15)	4-4,5,8,14,15,16,17,18,20,26,27,29 5-20,32
6-15	4^{c}	b.133	(Ex.3.15)	4-2,4,5,11,17,18,20,27,29 5-38 9-7
5-31	4^{vc}	b.133	(Ex.3.15)	4-13,18,27 9-7

Although they appear 'anomalous' in terms of the genus model, the number of inclusion relationships with primary genus members enjoyed by each set, suggests that while more distant qualitatively than those examined in Table 4.21, these sets still retain a tenuous grip on 'diatonic/not-quite diatonic' status. This proposal is confirmed by the observation that of all the sets listed in Tables 4.21 and 4.22, only one (8-20) is not a subset of an all embracing 'diatonic/not-quite diatonic' Genus 9-7/9-9.[32]

30 For example 7-25 contains a hexachordal 'primary' subset, whereas 7-26 and 8-4 maintain a more tenuous relationship with the genus through a tetrachordal subset.

31 Showing inclusion relations with sets of cardinal 4-9 only.

32 A genus not considered viable on two grounds, its large size (172 sets), and the relatively insignificant profile (salience) of the progenitor 9-7 (see Table 4.17).

"Characteristic sets" of Genus 8-22/8-23

Having established the likely viability of the genus 8-22/8-23 as a model for the Passacaglia in statistical terms, there is also the requirement that it should reflect, in some way, the "characteristics" of the musical object. In accordance with Parks's Rule 2 the intersection of the primary sets of this genus with the sets of the matrix was noted above (Table 4.20), while the three qualities by which Parks (p. 209) defines a "characteristic member" of a genus were outlined in Chapter 2. For sets to be seen as "characteristic", it will be recalled, they are required to exhibit "all or some" of three qualities:

> i) [that] they are all subsets or supersets of each other (except for the cynosural sets themselves, which may or may not be inclusion related); ii) within their interval vectors, they display some uniformity in patterns of interval class [...] distribution; or iii) within their successive-interval arrays, they display some uniformity in interval patterns.

The first of these qualities is relatively unproblematic. It stands to reason that in a theoretical system based upon the inclusion relationship, this should be so. However, at first sight the remaining qualities appear somewhat vague, particularly when the characteristic sets of complex genera are considered. For example, by way of illustration Parks (p. 209) outlines the characteristic set-classes for the complex genus 3-8/8-z15 (Table 4.23).

Table 4.23 Characteristic scs for complex genus 3-8/8-z15 (Parks, Table 2)

sc	iv	sia
9-8	676764	1-1-1-1-2-1-1-2-2
8-z15	**555553**	**1-1-1-1-2-2-1-3**
7-19	434343	1-1-1-3-1-2-3
6-30	224223	1-2-3-1-2-3
5-19	212122	1-2-3-1-5
4-z15	111111	1-3-2-6
3-8	**010101**	**2-4-6**

The sets chosen clearly exhibit the necessary credentials to be deemed characteristic under Parks's terms. Each is a subset or superset of the others, and plausible connections are established through the gradually expanding interval content (iv) of each set and similar sub-patterns within the successive-interval arrays (sia). However, in any complex genus each cynosure will generate its own characteristic sets in these terms. In a case such as that presented here, where the cynosural sets are of differing cardinalities the characteristic sets in four cardinalities are, to a certain extent predetermined, they are the cynosures and their complements. The fact remains, however, that alternative characteristic sets are plausible for cardinal five and six, depending upon whether they are seen to be more characteristic of one or other of the cynosures. It might be argued, for example that Parks's choice of characteristic sets in this case tends to favour the even distribution of interval classes characteristic of the all-interval tetrachord 4-z15. As a result the emphasis on 'even' number intervals characteristic of the cynosure 3-8 is downplayed. An alternative interpretation of what constitutes the characteristic sets of the genus might choose to emphasise the 'almost whole-tone' side of the genus's character, as reflected in the interval vectors of the alternative sets of cardinal 5/7 and 6 (Table 4.24).

Table 4.24 Alternative characteristic scs for complex genus 3-8/8-z15

sc	iv	sia
9-8	676764	1-1-1-1-2-1-1-2-2
8-z15	**555553**	**1-1-1-1-2-2-1-3**
7-28	344433	1-2-2-1-2-1-3
6-22	241422	1-1-2-2-2-4
5-28	122212	2-1-3-2-4
4-z15	111111	1-3-2-6
3-8	**010101**	**2-4-6**

The important point here is not that one alternative is necessarily more convincing than the other (if anything, Parks's selection presents a slightly smoother progression through the interval vectors), but that what constitutes a "characteristic set" is to a certain extent, subjective, particularly when more than one cynosure is operative.[33] The process of establishing the characteristic sets of a genus is, within certain theoretical limits, an empirical one. Which group of sets best captures the essential qualities of the genus as it is seen to operate in the context of the musical work in question? It is an extension, or refinement of the process that led to the proposal of a particular genus in the first instance, but with the emphasis now on the quality of the relationship between model and object, rather than simply numerical coincidence.

In establishing the characteristic sets for the Genus 8-22/8-23 (or any other complex genus) it is important to discover the pattern of intervallic properties that characterise sets associated with each of the cynosures in turn, thus establishing a pool of characteristic sets that reflect (in this case) the twin streams of isomorphic properties within the complex genus as a whole. As will become apparent during the course of this study, the extent which different genera exhibit truly "characteristic" sets is variable, dependent, largely, upon the intervallic individuality of the cynosural source. In the present case the characteristic sets associated with each of the cynosures are relatively easy to determine as the products of the generative diatonic and 'gapped' diatonic cycles; a morphology that is clearly reflected in the intervallic properties of the sets outlined in Table 4.25. Each displays all the qualities desired in a characteristic set with regard to subset and superset membership, gradual expansion in terms of interval vector and the presence of recognisable sub-components in their successive-interval arrays. Assuming, for the moment, that characteristic sets have been identified for each cardinality (3 - 9), fourteen sets may, at this stage, lay some claim to characteristic status.

In determining the characteristic sets for the complex Genus 8-22/8-23, however, it is also necessary to examine the relationship between the two groups of sets

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[33] In relation to this discussion I am particularly indebted to Richard Parks for his detailed and helpful response to a number of questions.

Table 4.25 Characteristic sets - Genera 8-23 and 8-22

8-23			8-22		
sc	iv	sia	sc	iv	sia
9-9	676683	1-1-1-2-1-1-1-2-2	9-7	677673	1-1-1-1-1-2-1-2-2
8-23	**465472**	**1-1-1-2-2-1-2-2**	**8-22**	**465562**	**1-1-1-2-1-2-2-2**
7-35	254361	1-2-2-1-2-2-2	7-23	354351	2-1-1-1-2-2-3
6-32	143250	2-2-1-2-2-3	6-33	143241	2-1-2-2-2-3
5-35	032140	2-2-3-2-3	5-23	132130	2-1-2-2-5
4-23	021030	2-3-2-5	4-22	021120	2-2-3-5
3-9	010020	2-5-5	3-7	011010	2-3-7

shown in Table 4.25. For example, a number of these isomorphic properties may be seen to cross over, integrating the 'diatonic' and 'not-quite diatonic' realms of the two genera. Most immediately apparent is the network of inclusion relationships between all eligible sets in the two groups. For example, 3-7 is a subset of all the 8-23 characteristic sets other than (obviously) 3-9, while the relationship between 3-9 and the 8-22 characteristic sets is reciprocal. But there are also differences between the two groups of sets, most notably in terms of symmetry. All the sets that characterise the diatonic Genus 8-23 are symmetrical, a property shared by none of the 'gapped' cycle Genus 8-22 sets. The significance of this difference lies in the increased opportunity for small non-symmetrical sets to form subsets of larger sets, a factor that may (arguably) have a bearing on their characteristic status. This issue, and the relationship between the products of the 'gapped' and 'ungapped' diatonic cycles are considered further in Appendix A.[34]

Having gained a working knowledge of the abstract properties and inter-relationships evinced by these sets, it is now possible to make a more informed decision regarding their characteristic status in the context of Schuman's Passacaglia - the extent of the (qualitative) 'fit' between model and object. Returning to Table 4.17 (p. 146), only four of the sets considered above are poorly represented in terms of saliency (column 4). The collection 9-7 from the 8-22 side of the genus appears only in Variation

[34] The discussion draws in particular on the work of Daniel Harrison (1997) and Richard Cohn (1988).

3, but it was seen to play a significant role as a point of harmonic stability, most notably marking the end of Block II and the beginning of Block V. Its important role in the variation was signposted in the initial shift from the 9-9 collection that opened the variation to the subsequent 9-7 collection involving the interchange of a single pitch-class (Fig. 3.10). Two further sets from the 8-22 side of the proposed genus are also sparsely represented, the complementary pair 5-23/7-23. Once again, however, the manner of their presentation does afford them a higher profile than the stark catalogue of salience can indicate alone. The sole occurrence of 7-23 is heard in the melodic conclusion of Variation 3 (see Ex. 3.12, bb. 117-21), while its complement forms an integral part of the Passacaglia Theme A (Ex. 3.2, bb. 5-6), and at the melodic climax of Variation 3 (Ex. 3.12, b. 109).[35] On the 8-23 side of the genus it is, perhaps surprisingly, the cyclic diatonic hexachord 6-32 that makes little impact on the musical surface in terms of overt presentation. It forms the opening melodic gesture of Variation 1 in the strings (Ex. 3.6, b. 50), with further occurrences restricted to Variation 4 in the form of vertical sonorities or collections (Ex. 3.15, bb. 125, 127, 137-8, 139, 142 and 143).

The characteristic status, or otherwise, of these sets, is dependent upon two factors; the extent of their presence in the music, and the extent of their intervallic (characteristic) association with other characteristic sets. A characteristic set must, to a greater or lesser degree, display both of these virtues. For example, although 6-32 does not form a constant presence throughout the Passacaglia, it is an important link in the chain of the diatonic cycle that is so strongly represented. Equally, the sets 5-23, 7-23 and 9-7 are heard at significant articulative junctures in the music, and, in the case of 5-23, as a segment of Theme A. This fact, when considered in the conjunction with their intervallic association with other characteristic sets on the 8-22 side of the complex genus, presents a strong case for the inclusion of these sets among the characteristic sets

[35] It also features, less consequentially, as a single vertical sonority in Variation 4 (Ex. 3.15, b. 129).

of the complex genus as a whole. Ultimately, the decision rests with the analyst. To what extent do the sets deemed characteristic reflect ('model') both the surface sonorities, and the internal dynamics of the music in question?

From this perspective it must be argued that the Passacaglia is heard, not in terms of the diatonic cycle interspersed with 'other', non-diatonic sets, but as an expression of a specific two-sided complex genus. Non-diatonic sets are heard to serve an articulative function in the music, and with very few exceptions, they are representative of a specific, 'not-quite diatonic' genus, deriving from the 'gapped' diatonic cycle discussed in Chapter 3 (Fig. 3.7). A genus-based model of this situation must embrace both sides of the duality, in terms of its overall constitution (the statistical correspondence between model and object), and those characteristic sets that most clearly exemplify the properties of model and object. In the present case it becomes clear that the complex genus 8-22/8-23 is most clearly expressed in terms of all the characteristic sets proposed in Table 4.25. The balanced distribution of characteristic sets reflects the consistent and total engagement of the music with the proposed genus (Table 4.26).

Table 4.26 Characteristic sets for Genus 8-22/8-23

sc	iv	sia
9-9	676683	1-1-1-2-1-1-1-2-2
9-7	677673	1-1-1-1-1-2-1-2-2
8-22	**465562**	**1-1-1-2-1-2-2-2**
8-23	**465472**	**1-1-1-2-2-1-2-2**
7-23	354351	2-1-1-1-2-2-3
7-35	254361	1-2-2-1-2-2-2
6-33	143241	2-1-2-2-2-3
6-32	143250	2-2-1-2-2-3
5-23	132130	2-1-2-2-5
5-35	032140	2-2-3-2-3
4-22	021120	2-2-3-5
4-23	021030	2-3-2-5
3-7	011010	2-3-7
3-9	010020	2-5-5

Conclusions

With the characteristic sets confirmed, the generic model 8-22/8-23 is now complete. Although it does not account for every set encountered in the music (recall the 'anomalous' sets listed in Tables 4.21 and 4.22), the extent and nature of the correspondence between model and object does allow pertinent analytical observations to be made. At the forefront of these observations is the fundamental role played by the diatonic cycle in the generation and control of pitch materials. In Chapter 3 the influence of extended diatonic collections over successive blocks of the musical texture, and unfolding melodic lines, was clearly illustrated.[36] This generative function is reflected in the Genus 8-22/8-23 in two ways. In the first instance, the high degree of correspondence between the primary sets of the genus and Passacaglia matrix (illustrated in Table 4.20) is a reflection of the common generative function of the diatonic and 'gapped' diatonic cycles on both sides of the genus. This common ground is consolidated by those sets marked out as 'characteristic' of the genus (Table 4.26). The few primary sets that do not feature in the music are, as noted above, those perhaps least readily associated with the diatonic cycle. The intervallic properties of these 'null' sets are far removed from those deemed characteristic of the genus, as a comparison between Tables 4.27 and 4.26 illustrates.

Minimal representation in the ic-5 column of the interval vectors, combined with relatively high values for ic-1 among the small sets puts these sets on the margins of the genus when viewed from the 'cyclic' perspective. Their presence as primary sets is attributable to the generative power of the high cardinality cynosures. It is in this

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[36] Recall, for example, the initial unfolding of the contrapuntal texture in the Canon (Ex. 3.3), and the interaction of melody and accompaniment in Variations 3 and 4 (Exs. 3.11 and 3.14). The influence of these collections over melodic materials was observed in the controlling violin 1 line atop the accompanying texture in Variation 1 (Ex. 3.6), the parallel, though melodically different, collections

Table 4.27 Genus 8-22/8-23 'null' primary sets

sc	iv	sia
3-1	210000	1-1-10
4-1	321000	1-1-1-9
4-2	221100	1-1-2-8
4-4	211110	1-1-3-7
4-8	200121	1-4-1-3
4-21	030201	2-2-2-6
5-2	332110	1-1-1-2-7
5-9	231221	1-1-2-2-6
5-12	222121	1-2-2-1-6
6-8	343230	2-1-1-1-2-5

distinction between sets that may be seen simply as 'by-products' of a large cynosure and those that truly reflect the generative process behind the music, that Parks's concept of "characteristic sets" is most valuable. The extent to which the complex genus 8-22/8-23 can be seen to model the internal dynamics of the music in terms of the bar-by-bar interaction of diatonic (and therefore 'consonant') and not-quite diatonic (and therefore 'dissonant') sonorities was discussed above (p. 137) and need not be reiterated here.

Preliminary comparisons

The efficacy with which the Parksian model of pitch-class set genera accounts for the pitch materials of Schuman's Passacaglia, and the extent to which it affords specific analytical observations, inevitably draws comparison with the Fortean genera model applied in the first part of this chapter. The primary concern in relation to the Forte profiles was a lack of focus in terms of specific genera. An overall trend in favour of genera positioned towards the 'diatonic' end of the generic spectrum was observed, however, and Supragenera III and IV were seen to represent facets of the 'diatonic' and 'not-quite diatonic' characteristics confirmed by the Parksian approach. Against this

controlling the two halves of Variation 2 (Ex. 3.8) and the effect of 'homing in' on the stable collection in should be weighed the relatively large number of sets scattered across other genera that appeared to make no obvious or consistent contribution to the genera profiles. An additional sense of unease was seen to stem from the allocation of often overtly diatonic sets to these diffuse genera. Ultimately, the conclusion must be reached that the generative principles displayed by Schuman's Passacaglia (and, it might be assumed, similar diatonically oriented music) and Forte's genera are at odds from two related perspectives. The constitution of the matrix of sets representing the music reveals a preponderance of small sets in relation to large ones. From this it may be inferred that, a) complement relations play a relatively small part in the relationship between sets, with the emphasis, rather, on the inclusion relationship, and b) a coherent model of those inclusion relationships must be generated from the top down; in other words the cynosural centre of gravity must emanate from a set, or sets, of high cardinality. Viewed in these terms it should come as little surprise that the Fortean model, while informative in a number of respects, fails to capture the highly specific and characteristic distribution of sets in this piece. That Forte's particular model of pitch-class set genera does have an important role to play in the analysis of Schuman's later music will become apparent.[37]

In writing of Schuman's "Creative Bearings" Vincent Persichetti (Schrieber and Persichetti, 1954, pp. 50-51) drew attention to an undue fondness for "chords by fourths" in the earliest works: "Delighted in his ability to produce a variety of colors by combining fourths, he set out to build whole sections and sometimes pieces on these chords by fourths". Noting that the resulting harmonic background "became pale and the tension monotonous", Persichetti observed that Schuman quickly "began to demand that his abused harmonic formations take their place in the formal scheme. His structural thinking was imaginative and colorful, and required his harmonies to follow

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the final bars of Variation 3 (Ex. 3.12).

[37] See Chapter 8.

through in reciprocal relation." As with so much of Persichetti's writing on Schuman, a straightforward and down to earth description often disguises a more penetrating analytical insight. Although the formal structure of the Third Symphony is essentially "architectural", imposed from without, the Genus 8-22/8-23 model provides a clear picture of the significance attached to the control of pitch materials in all dimensions of the music. As Schuman's style develops this control will increasingly be turned towards a close integration of form and 'idea', as clearly differentiated motivic materials begin to inform a more overtly 'symphonic' (oppositional) approach. For the moment it is worth noting the extent to which the analyses contained in this and the previous chapter provide a detailed and specific account of Schuman's new found reciprocal arrangement between quartal harmony (the diatonic cycle) and "structural thinking".

With the emphasis in this chapter on methodological concerns, there is a danger that the genera profiles presented will serve to confirm an archetypal view of analysis, and genera models in particular, as an activity serving to divorce the 'autonomous' musical object from the wider context of its existence both in performance, and as a product of a particular time and place. As the following analyses unfold, however, genera theory will be seen to operate in a wider context, performing a specific, and valuable role in charting Schuman's evolving engagement with the genre of the symphony. The following chapter is concerned with two related aspects of that wider context, namely the influence of Roy Harris upon Schuman's approach to harmony, and a particular manifestation of Schuman's historicist orientation, the allusion to functional tonality.

CHAPTER 5

HARMONY AND MOTIVE: TONAL ALLUSION AND THE INFLUENCE OF ROY HARRIS

One of the enduring fascinations of neoclassicism in music is the nature of the interaction between the new and the old.[1] The remoulding of the formal rhetoric of the Grand Tradition in the context of the opening Passacaglia of Schuman's Third Symphony formed an important strand of the analysis presented in Chapter 3. The tension between Schuman's modernist inclination and his acute awareness of the (tonal) symphonic legacy upon which he wished to build is nowhere more apparent, however, than in the Chorale movement that opens Part II of the symphony. With the emphasis upon primarily homophonic textures (in contrast to the contrapuntal textures that dominate the rest of the work), patterns of tonal allusion gain a far greater prominence here, but, as will become clear, it is a prominence that is resisted by the overall structural framework of the movement.

A second aspect of Schuman's "modernist dilemma" is also explored in the Chorale movement, and it is one that has a far greater bearing upon his musical language in the years to come. The role played by harmonic identity (the consistent deployment of particular sonorities) in defining a more genuinely symphonic dialectic,

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[1] A number of studies have examined these issues various perspectives. A by no means inclusive list includes those by Joseph Straus (1990) and Martha Hyde (1996), both of whom draw upon literary models to examine the nature of, and motivation behind, the neoclassical impulse. Ivan Waldbauer (1985), Kofi Agawu (1989) and Chandler Carter (1997), meanwhile, focus upon the problem from a more specifically analytical perspective.

and the gradual merging of the horizontal and the vertical dimensions into a motivic texture owing more to Schoenbergian organicism than Stravinskian fragmentation, will be recurrent topics in later chapters. It is a development that is anticipated here, in a limited sense, in Schuman's isolation of a particular 'triad plus added-note' sonority to define the harmonic identity of a section of the Chorale.

The primary purpose of this chapter, then, is to consider the nature of what might be seen as a series of (to borrow Lawrence Kramer's term) "hermeneutic windows" on Schuman's relationship to the musical past and his own engagement with the symphonic form.[2] For example, to what extent do the various more or less overt tonal allusions that characterise the movement provide merely localised, colouristic inflection, and to what extent do they (as suggested above) penetrate more deeply into the musical structure? Do specific pitch formations provide a motivic, unifying force throughout the movement, 'bridging the gap' between melody and harmony (the vertical and horizontal dimensions), and finally, does the genus 8-22/8-23 model, established in Chapter 4, hold good here? The answers to these essentially analytical questions may be seen to cast additional light upon Schuman's position in relation to the historicist mainstream, and to raise further issues concerning the nature of neoclassicism.

Essential to Schuman's historicist orientation is the teaching of Roy Harris. As will become clear, much of Schuman's approach to harmony, as projected in the predominantly homophonic textures that characterise the Chorale, may be traced directly to Harris's teaching and theoretical views in the late 1930s.[3] In addition, Harris was instrumental in directing Schuman towards the study of Renaissance models that inform much of the latter's early work, not least in relation to the concepts of harmony, counterpoint, consonance and dissonance. Before examining the Chorale in greater

[2] I am grateful to Ian Biddle for bringing Kramer's (1990) concept to my attention.
[3] Schuman studied intermittently with Harris from 1936-38, see Chapter 1.

detail therefore, a brief consideration of Roy Harris's influence as teacher and theorist will provide a necessary context.

The Influence of Roy Harris

Attempts to trace influences in the work of a composer can be fraught with difficulty, but in this instance the claims are specific and limited. When asked by John Clark to discuss the influence of other composers on his "symphonic thought" Schuman responded (in part) as follows:

> There are those I seem more prone to follow than others. A lot has been made for my affection for the music of Roy Harris which I still have; but I was very young, those were my formative years. I'm very active in trying to promote his music now that he is no longer alive because I think that he is one of the most underrated American composers; he was a great original thinker. Having said that, I'm aware that we differ enormously, and I went my separate way. Critics, evaluators, and scholars who make a lot of that connection usually don't make enough of the beginning connection [...] Nevertheless, to answer your question, he was an enormous early influence [...] Of the standard composers I would say that Beethoven was perhaps the greatest influence as well as Bach and Lassus. I obviously had some early music in my ears, Roy introduced me to that.[4]

The early influence of Harris, and in particular his concern with sixteenth century practice is further remarked upon by Christopher Rouse (1980, p. 8):

> He exposed Schuman to organum, modes and Renaissance polyphony, and in so doing demonstrated their application to Harris's own work. His compositional style soon began to make itself felt on his student. He now added a thorough knowledge of Renaissance counterpoint to the more traditional knowledge he had gained from [Charles] Haubiel; he also learned his new teacher's approach

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[4] Quoted in Clark (1982, pp. 234-36). In the light of his previous comments concerning his early allegiance to Stravinsky (Chapter 2) it is interesting to note Schuman's explicit denial of influence in this interview: "Stravinsky I admired a lot and I worked for him as an editor at one time. I like his music very much but it never had a great influence on me" (ibid., p. 235).

to polyharmonic writing - an approach Schuman would later remarkably transform.

It was from the example of Harris that Schuman learned to associate and combine vertical sonorities through common-tone intersection to produce a quasi-Renaissance 'floating tonality',[5] divorced from the traditional relationships of conventional tonality. The origin of this approach in Harris's own music is traced by Robert Evett (1946), while the phenomenon of 'floating tonality' and common-tone relationships in the work of other mid-twentieth century composers is discussed briefly below.

Evett (1946, pp. 100-07) provides a detailed account of Harris's harmonic idiom, describing what Harris sees as three important functions of harmony.[6] The first of these is "the function of providing mass resonance", while the second, and most important in the current context, is the use of harmony "for the inflection and modification of the melodic line." Even without going into further detail it is possible to see the reflection of Harris's approach in the harmonic practice encountered in Schuman's Passacaglia. The use of a distinctive harmonic texture to characterise a particular section, for example, is a further reflection of Harris's third harmonic function, that of "architectural definition". Further, specific examples of Harris's influence in such matters will proliferate during the course of this chapter.

In tracing the influence of Harris on the musical language of the Chorale movement two factors are of particular significance: the relationship between melody and harmony, and the system of common-tone associations between sonorities (usually

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[5] The term is Edward Lowinsky's (1990), see below.

[6] All subsequent citations are from this source. A broadly similar account of Harris's approach to harmonic materials, drawing on Evett, is given by Stehman (1984, pp. 32-42, and 1986, p. 334). The lack of verifiable testimony on such matters by Harris himself is a source of continued frustration, but Stehman's credentials as a longtime assistant to Harris are sound.

triads) within a particular passage. Evett (p.101) outlines Harris's approach in the following terms:

> When teaching, he makes a practice of harmonizing a given melodic idea [...] a dozen ways in straight triads: first in majors alone, then in minors, then in a mixture of the two, going from bright to dark, reversing the direction to bring out every implication of the line itself . In applying this procedure to his own work, Harris has concluded that a harmonization should be used which most eloquently underscores the linear materials [...] This attitude has roots in such musical evolutions as the masses of Orlandus and Josquin des Prez, or in the chorale treatments that grew out of the Lutheran service.

For Harris, traditional tonal relations are undermined by the priority given to the overtone series generated by the lowest note (regardless of its function in the chord) in determining the tonal allegiance of a particular chord. On this basis,

> [h]e would feel, for instance, that the first inversion of a C minor triad would have much of the quality of Eb major, owing to the close relationship of the fundamental Eb and the G, the fifth of the triad, but its own major third. Consequently, he would probably treat the harmony as he would an Eb major chord. It is partly because of this that it is impossible to analyze his harmony by root progression (p. 104).

As a consequence, relationships between chords are determined less by traditional tonal relationships than by association via common-tones. Reproducing (in a slightly clarified form) Evett's chart of common-tone relationships, Dan Stehman (1984, p. 35) describes the system as follows (see Ex. 5.1):

> [T]he root of a given triad can serve as the fifth degree of the subdominant major and minor triads and as the third degree of the major and minor triads on the two forms of the submediant scale degree. The two forms of the third of the tonic triad can serve as root of major and minor triads on the mediant scale degree, while the fifth of the triad serves as the root of the major and minor triads on the dominant note. In addition, the subdominant and dominant major and minor triads generate their own sets of relationships which parallel those of the tonic triad.

Although there is no evidence that Schuman adhered to Harris's belief in a scale of colouristic intensities for chordal formations determined by the overtone series,[7] the Chorale movement does provide clear evidence of the influence of Harris's teaching on Schuman's approach to harmony. The concept of common-tone association between vertical sonorities will be shown to underpin much of the harmonic structure, and the idea that harmony should "underscore the linear materials", providing a variety of backdrops highlighting different aspects of the melodic material, is given particular prominence.

Of course such means of organisation are by no means unique to Harris and Schuman. A number of analysts have drawn attention to composers' use of local effects of consonance and dissonance, with the triad as a consonant 'norm', while more traditional aspects of harmonic structure and progression may be absent. Arnold Whittall (1990, p. 76), for example, finds the Finale of Tippett's Second String Quartet,

> poised to embrace a consistent kind of 'tonality without progression', concerned primarily with local relationships between degrees of consonance and dissonance, and articulated by linear motions which depend less and less on being projected between points of tonal structural emphasis. The general absence of traditional types of cadence and of root position harmonies confirm this 'floating' textural treatment.[8]

The apparent connection between this sort of twentieth century 'floating tonality' and sixteenth century models is suggested in Edward E. Lowinsky's (1990, p. 38) account of "moderate" and "radical" madrigal composers:

> The moderate wing, represented in Italy by Willaert and his circle, and in the Netherlands by the adepts of the secret chromatic art, practiced a technique of modulation that expanded the limits of modality without erasing them entirely.

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[7] Described further by Evett (p. 104).

[8] Cf. Derrick Puffett (1986, p. 262-63, n.19), writing of the same quartet.

> In their more daring advances they began to write in a style that I should like to call 'floating tonality' - the tonal centre kept shifting from one area to another.

It is in the work of the "radical wing" however, that he finds (notably in the work of Orlando di Lasso),

> phenomena that cannot be understood either in terms of the old modality or in those of the newly emerging tonality, phenomena that are best described as "triadic atonality." Here is a music in which extreme chromaticism and constant modulation within a triadic texture of harmony erode any sense of a stable tonal centre (ibid., p. 39).

It was in attempting to forge a "modernism of moderation" by projecting familiar sonorities into new, post-tonal contexts, that composers found valuable models in the more distant past; none more so than Harris.

Chorale: harmonic structure and tonal allusion

Returning to the analysis, the sectional structure of the movement (comprising an introduction, five discrete settings of the Chorale theme, and coda) allows different modes of organisation (centric association, tonal allusion, harmonic identity) to be foregrounded in turn, throwing the relationship between past and present into sharp relief from varied perspectives. Ex. 5.2a presents the theme in isolation, as it is first heard, while Fig. 5.1 provides a formal outline of the movement. Although the theme undergoes occasional extension and rhythmic augmentation, the basic intervallic structure and the transpositional level of the theme is retained throughout. The focus of interest, therefore, is upon the different harmonic contexts in which the theme is heard. The objective appears to be to "bring out every implication of the line itself".

Fig. 5.1 Chorale - Formal outline

b.1	b. 21	b. 31	b. 41	b. 49	b. 66	b. 71	b. 91	b. 106	b. 111	b. 126
Intro	C^{i}	C^{ii}	ext	C^{iii}	ext	| C^{iv}	C^{v}	ext	| Coda	'C'

The two-part linear texture of the introduction (doubled in octaves) shown in Ex. 5.3, establishes the important, organum-like sonority (A-E) previously encountered in the discussion of referential collections across the symphony as a whole (Chapter 3, p. 112). The A-E fifth can be seen to form the focal point for a series of referential sonorities underpinning the structure of the movement. These sonorities are associated not only through their similarly privileged durational and metrical presentation, but also centrically by common-tone intersection. As suggested above, however, while these associated structural landmarks are unequivocal, they represent only the most obvious thread in a complex web of association, offering a constantly changing perspective to the listener.

The most obvious hallmark of such neoclassical plurality is to be heard, within the first three settings of the Chorale theme, in the interplay of these contextually defined structures and the forces of conventional tonality. But, as suggested above, this contextual/tonal interplay is not the only plurality explored during the course of the Chorale. A significant shift of perspective occurs at b. 71 (see Ex. 5.5) where the fourth presentation of the theme (C^{iv}) abandons the almost exclusively triadic texture heard up to this point in favour of an essentially two part texture (an inner part of parallel fifths syncopated against the theme in octaves in the outer parts) that largely avoids the centric associations of earlier sections. Both here and in the subsequent setting (C^{v}) contact with the focal A-E sonority is significantly weakened in favour of a consistent and distinctive harmonic texture, reflecting Harris's view of harmony as "architectural definition". The consistent presence of the Chorale theme (only marginally transformed) allows for a temporary shift of emphasis from the earlier presentation, grounded on a specific (A-E) pitch centre, to what might be seen as a more 'colouristic' presentation in sections C^{iv} and C^{v}. The principal, centric, mode of structural organisation is only re-affirmed with the return to the introductory material in the horns that marks the onset of the Coda (b. 111). The marked disjunction between sections of the movement governed by the association of centric sonorities and those relying on the presentation of a consistent harmonic identity is typically 'Stravinskian' in its fragmentation, or interruption of established patterns. Equally typical, however, is Schuman's historicist resistance to such fragmentation, as demonstrated in the concluding section of this chapter where the 'colouristic' settings of the Chorale are considered from the perspective of an all embracing motivic unity, embraced by the model Genus 8-22/8-23.

Ex. 5.3 highlights the principal sonorities around which the two melodic strands of the introduction coalesce (bb. 1-21). In illustrating the occurrence of such sonorities and the relationships between them, the analysis adopts a quasi-Schenkerian presentation. It is important, however, to dissociate the analysis from Schenkerian theory as it is conventionally applied to tonal music. For example, the initial 'white-note' collection becomes grounded on the A-E fifth that forms a centre of gravity for the surrounding pitches through bb. 5-9, most obviously in the form of the repeated neighbour note motion G-A, but also in the stepwise ascent to E from C in the upper voice (b. 4). What is entirely absent, however, is any form of functional cadence in conventional terms. While the cello's descent to F in the opening bars may initially be heard as coming to rest on the fourth degree 'in C', or the tonic degree 'in F' (a reading that appears to achieve at least partial confirmation with the arrival of the F major triad on the first beat of b.4),[9] such expectations are undermined by the entry of the viola on E, and the subsequent superimposition of fourths (E-A-D-G), in bb. 2-3. In the light of this ambiguity, the absence of an explicit tonic-dominant relationship ensures that the A-E fifth achieves privileged status in the analysis (indicated by the open note heads) simply by virtue of its sustained presence and limited elaboration; it is so defined by its context (a process to be considered further below). Similarly, the use of notational beaming serves two purposes specific to the present analysis. The beaming together of the A-E sonorities in b. 5 and b. 9 indicates the controlling influence of these 'pillar chords' throughout the span indicated by the beam.[10] While a parallel may again be drawn with the Schenkerian concept of prolongation, it is a strictly limited one. In the present context a sonority holds sway by virtue of its continued presence and limited elaboration. As discussed in Chapter 2, the absence of traditional tonal hierarchy makes more conventional modes of prolongation, where the sonority in question need not necessarily be present at all, impossible. Instead, the discontinuous beaming points to associative relationships between established referential sonorities (such as the return of the A-E sonority in b. 16). As the ensuing analysis will reveal, it is possible on this basis to establish a strictly limited hierarchy of such sonorities, established in these contextual terms, that may be seen to underpin the surrounding harmony.

With the A-E fifth heard to ground the opening bars of the introduction, similar (albeit durationally less extensive) sonorities achieve a degree of structural significance in the central section of the introduction, prior to the return of the A-E fifth in b. 16. First is the fifth C#-G# (b. 11), approached by the stepwise third 'passing' motion in the bass from A. A similar scalic descent from Bb (b. 12) then leads to a sustained Gb (over

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[9] The allusional nature of all such relationships is indicated by the use of quotation marks in the examples.

[10] The term "pillar chord" is used by David Neumeyer (1986) in a similar context in relation to the music of Hindemith. Neumeyer (p.14) traces the term initially to the influence of Ernst Kurth.

five beats) in b. 13, the upper line eventually falling to Db (b. 14), forming a second fifth Gb-Db. These two sonorities (filled note-heads, beamed) are seen to achieve their structural significance by virtue of their metrical placement and the approach to each by a similar rising, or falling, stepwise third figure that parallels the approach to the original A-E sonority (F-G-A in the 'cello, C-D-E in violin 1). These 'secondary fifths' establish a polarity around the 'primary' A-E, a major third above (C#-G#), and an enharmonic 'minor third' below (Gb-Db), a relationship to be explored further below.

Less prominent in terms of their metrical placement and duration are the open fifths that were seen to mediate between the third-related sonorities described above: B-F# (b. 10) and Bb-F (b. 12). They achieve a degree of analytical significance (stemmed, but not beamed) by virtue of their intervallic association with the sonorities that they connect, but they are denied comparable status by the manner of their presentation, notably a lack of rhythmic emphasis. Similarly, from the Gb-Db of b. 14 two further fifths (Ab-Eb and Bb-F) rise stepwise to a distinctive, metrically accented major third (C-E) that effectively heralds the reinstatement of the 'white-note' collection and the A-E sonority. Heard in conjunction with the preceding Bb-F, the C-E sonority alludes strongly to tonal function, projecting a 'IV-V' progression in F major that anticipates resolution. The leading note, E, does indeed resolve to F, but the 'dominant', C, has to be content with a return (via G) to the A of the pre-eminent referential sonority. The extent to which such allusions are perceived is somewhat dependent upon the individual listener. What is not in doubt, however, is the structural significance afforded the C-E dyad (flagged) in terms of the stepwise approach to it in the bass and its metrical placement, in combination with the disruption of the prevailing (fifth) intervallic norm. A number of sonorities are similarly highlighted in terms of their departure from the prevailing norm as the movement unfolds. The device appears to draw attention to moments of heightened tonal allusion. In the present case two readings would appear to be possible: on the one hand the C-E dyad may simply mark the imminent return of the A-E sonority via common-tone association, but a more 'historically aware' reading may also detect a reference back to the ambiguous F major at the beginning of the movement.

It is perhaps worth pausing here to reaffirm the theoretical framework that derives from this initial reading of the opening bars of the movement. The passage most clearly accords with Paul Wilson's (1984) associative model of departure and return,[11] with the outer, 'white note' collection grounded on the dyad A-E through a combination of localised melodic elaboration, and simple durational presence. The central section (bb. 10-15) is markedly less stable both in terms of its pitch content (the shifting pattern of 'gapped' collections heard here is discussed below), and the duration of comparable open-fifth sonorities.

From here it is a short, but potentially hazardous, step to introduce the notion of hierarchy between sonorities that appear to be afforded differing degrees of contextually defined significance in the music. The step is a hazardous one, however, only if it is accompanied by Schenkerian ideal of smooth passage between levels of hierarchic significance, where every 'surface' detail achieves its significance in terms of the structural level below, and every aspect of that 'middleground' is an elaboration of a still lower level of structure. The alternative proposed here sees the sonorities prioritised in the context of the whole by virtue of their position and durational emphasis representing a 'deep' structure of a sort, but it is not the only such structure, and it cannot account for every event on the 'surface'.[12] Other factors also play a part, most

[11] See Chapter 2, p. 43.

[12] Agawu (1989, pp. 150-57) examines a number of passages from Stravinsky's Mass that are seen to prolong particular pitches or sonorities in a localised context, outside of convention patterns of voice leading. Despite the loosening of traditional criteria, Agawu's prolongations always retain an essential thread of continuity in terms of common-tone connection or traditional diminutions (neighbour notes, passing tones etc).

notably fleeting tonal allusions and certain linear properties in the theme itself. This model of discontinuity between 'levels' owes much to Robert Fink's (1999) intriguing examination of what he sees as a gradual 'flattening' of the 'surface-depth' relationship in contemporary music, and the ideology behind Schenker's hierarchy function. Perhaps of greatest significance in terms of the current discussion is his suggestion (made with reference to rather more radically 'fractured' works than Schuman's Chorale) "that many contemporary works replace [a] single deep structure with multiple deep and surface structures *that do not work together at all*."[13] Viewed in these terms the dual reading of the C-E dyad suggested above seems entirely feasible.[14]

Returning to Schuman's Chorale, a similarly fractured interplay between localised common-tone association and tonal allusion underlies the first two settings of the Chorale theme (C^{i} and C^{ii}), shown in Ex. 5.4. As is so often the case in Schuman's music, an apparently straightforward presentation of the thematic material serves to disguise more subtle structural interactions. In this case the first complete statement of the theme (C^{i}) and the first half of the second statement (C^{ii}) are treated as a single harmonic unit (bb. 22-38).[15] The homophonic texture now presents the primary A-E sonority as a first inversion chord of A minor (bb. 23, 25, 32 and 38). As in the introduction, a 'thirds' polarity is established around this primary 'pillar chord', now in the form of the similarly inverted chords of C minor (bb. 27 and 30), and F sharp minor (bb. 33 and 35). The polarity is extended still further, however, with common-tone

[13] Fink (1999, p. 132n). Emphasis original.

[14] Consider also Christopher Mark's (1985, p. 269) account of the opening bars of Brittien's String Quartet No. 1. He describes "functional and non-functional/contextual processes [that] are inextricably bound together: the apparent anomalies from the functional perspective are rendered coherent by a non-functional reading, and the apparent anomaly from the non-functional perspective [...] is rendered coherent by a functional reading." A similar interplay is highlighted by Ivan Waldbauer (1985, pp. 418-25) in the music of Bartók. In answering the question: "what happens when music that is basically tonally conceived makes use of nontonal or atonal intellectual-mechanical constructs and processes?", he concludes that the music is being "doubly determined, or double-coded."

[15] The sense of continuity is enhanced by the overlap of the trumpet and flute parts in bb. 29-31.

intersection embracing chords of E minor (b. 27) and D minor (bb. 31, 34, etc.). The 'filling out' of the associated sonorities into triadic form serves to emphasise the common-tone relationships that connect them, and implicitly, those of the introduction (Fig. 5.2).[16] The debt to Harris's teaching is clear.

Fig. 5.2 Common-tone connections between associated sonorities

Introduction		G#			
(bb.1-21)		(E)	E		
		C#	(C)	Db	
			A	(Bbb)	
				Gb	
C^i - C^{ii}	B				
(bb.21-38)	G	G			
	E	Eb	E		
		C	C	C#	
			A	A	A
				F#	F
					D

The accompanying texture comprises first inversion triads (often in parallel motion) almost throughout, weakening any functional sense of progression. The relationship between the melody and the accompaniment is such that the triad is heard as a consonant norm, a relationship emphasised by local dissonant inflection, as in the case of the dissonant Ab in b.22, heard to resolve on to the subsequent G minor chord. A similar neighbour note inflection is heard in the cello (b. 25), the syncopation of the B against the prevailing A minor triad highlighting the importance of rhythm and metre in projecting these traditional patterns. The sense of fracture between two modes of organisation (functional tonality and contextually defined association) is repeatedly emphasised in the relationship between melody and accompaniment. A typical example is heard in the opening phrase of the melody (bb. 22-23). Rising stepwise figures in cello (F-G-A) and viola (Db-D natural-E) lead to the primary 'pillar chord' (C-A-E) in

[16] In the accompanying examples common-tone associations are indicated by dashed slurs.

b. 23, whose arrival is also reflected in the melody at this point (E-C-A). At the same time, however, the movement of the bass line (Bb-C-F) reawakens the earlier tonal allusion to the cadential progression in F major heard in the introduction. Is this the 'resolution' previously denied the C-E dyad in b.16? The answer, of course, is both yes and no. The bass progression is strong and the melody can be heard to articulate a perfect cadence in b.23, but the A minor pillar chord undermines the progression, most notably in the viola, where the E^4 remains firmly stuck. In common with the approach described above in relation to Harris, there is a sense in which the lowest pitches of each chord assume a root function, regardless of the constitution of the chord itself. A similar fracture is heard in the approach to the second A minor pillar chord (bb. 24-25). Here it is the voice leading of the melody line that implies a familiar cadence pattern across the barline, onto the E^5 concordant with the A minor triad. While the melody suggests a perfect cadence in C (^{b}II - V - I), or E minor (also ^{b}II - V - I), the underlying harmony (first inversion triads of Bb major, Cb major and A minor) simply 'floats', suspended from the melody. The E minor implication of the melody is realised with the arrival of an E minor triad in b. 27 (under a fermata marking the end of the first half of the melody), but it is immediately undermined by semitonal slippage (B to C, E to Eb) bringing the melody to rest on the 'secondary' pillar chord of C minor. The reference to E minor is revived one last time in what might be heard as an allusion to an imperfect cadence as the trumpet hands over the melody to the flute, coming to rest on a root position chord of B minor (flagged), a departure from the norm of first inversion triads. The reference is equivocal, not only in terms of its presentation (it requires a particular awareness on the part of the listener), but also in its inconclusive (imperfect) tonal function.

The fracture between melody and harmony is closed to a degree in the conclusion to the C^i setting (bb. 30-31). The traditional, functional voice leading of the trumpet and flute parts imparts an enhanced sense of cadence to the stepwise juxtaposition of C minor and D minor triads. This 'cadential' association of alternating triads of C and D minor, deprived of its functional gloss (the melodic voice leading), then recurs at a number of important points throughout the movement, as, for example, in the 'transition' to C^{iii} (bb. 44-47).[17]

The second presentation of the Chorale theme in the flute (C^{ii}) reaffirms the role of contextually defined sonorities and common-tone association around the A minor pillar chord (Ex. 5.4). The 'secondary' pillar chords illustrated in Fig. 5.2 establish a clear framework of harmonic support for the melody, reinforced by the interaction of rhythm and melodic contour. For example, the F# minor chord is placed on the downbeat of b. 33 and b. 35, while its common-tone association with the A minor chord is emphasised by the melodic octave leap (A^4 - A^5) across the barline (bb. 32-33). The second occurrence of this chord (b. 35) coincides with the end of the melodic phrase (note also the 'fractured' quasi-cadential bass line at this point, E-A). In addition to this framework of 'secondary' pillar chords, many of the triads 'suspended' from the melody forge common-tone links with their immediate neighbours.[18] The highest degree of such continuity is reserved for the concluding bars of the harmonic unit that spans bb. 22-38. The pitch-class G forms a continuous link (broken only by the penultimate B minor 'passing chord') from b. 35^4, culminating in the retention of the flute G^6 over the A minor pillar chord in b. 38. The resulting 'polychord' highlights a common-tone association between the triads of A minor and C major unrealised until this point, but

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[17] Agawu (1989, pp. 141-47) discusses a similar redfinition of cadential function in Stravinsky, drawing a useful distinction between "syntactical arrangement and what might be called gesture sense."

[18] Note that in spite of the similar contextual framework, the melody is harmonised using almost exclusively different triads from those employed in the previous setting; a further illustration of Harris's teaching regarding the relationship between melody and harmony.

one that will play a significant part in the contextual framework as the movement unfolds.[19]

The second half of the melody (bb. 38-41) resumes the 'cadential' association of triads a tone apart first heard in bb. 30-31. Whereas the first part of the setting coalesced around the primary A minor pillar chord, here it is the secondary C minor pole that predominates. It is approached from below in b. 39 (Bb minor - C minor), and thereafter the original C minor - D minor 'cadence' that concluded C^{i} is recast, putting the emphasis onto the C minor chord (bb. 40-41). The transition to C^{iii} is then instigated via a stepwise succession of parallel first inversion chords leading to the opposite secondary pole (F# minor) in b. 43. An immediate return to the C minor pole marks the onset of the transition to C^{iii}, again invoking a stepwise succession, now in the melody over a fourfold repetition of the C minor - D minor 'cadence' figure. The scalic ascent to D^{6} in the melody leads to a brief anticipation of the Chorale theme (b. 48) harmonised in root position triads. Culminating in a close position G major triad, this brief anticipation of the Chorale theme forms a common-tone link with the scalic ascent that led to it (indicated by the dotted slur), while the G triad itself will be seen in turn to anticipate the harmonic context of the following setting. What is abundantly clear from this somewhat discursive account of settings C^{i} and C^{ii} is the multiplicity of factors (contextual association, tonal allusion, scalic succession) that coalesce to greater or lesser degrees in the articulation of the whole.

The third setting of the Chorale theme (C^{iii}) is again seen to gravitate around a clearly defined primary pillar chord, grounded on C, but it is now a triad of C major rather than A minor, exploiting the double common-tone relationship (C-E) between the two triads first revealed in b. 38 (Ex. 5.5). This reorientation is achieved through the

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19 The term 'polychord' is used in its usual sense, denoting a sonority made up of two, or more, superimposed triads. See Persichetti (1962, Chapter 7).

most overt reference to functional tonality heard at any point in the work. As in previous settings a clear distinction is made between the two halves of the theme. In this instance the first half (strings only) is harmonised throughout by root position triads (bb. 49-64), while the second half presents a two part contrapuntal texture (violin 1 and 'cellos) that forms little more than a transition to C^{iv}, alluding only to briefly [Eb, Bb, F, C] to the theme itself.

The new C major pillar chord is established by the realisation of a cadential progression implied by the melody, but purposefully denied up to this point. Ex. 5.5 illustrates the rather 'parallel' progression V/V, IV/♭II, ♭II, V, I in C (bb. 51-3) that may now be heard to contextualise (as an anticipatory dominant) the close position G triad heard at the end of the previous setting (bb. 48-49). The melodic E^5 (bb. 53-54) is now underpinned by the tonicised pillar chord of C major, a resolution enhanced by the quaver rest that precedes it. While the extent of the tonal allusion projected here is unequivocal, the suppression of traditional patterns of voice leading ensures that the parallel triads are never in danger of losing their quotation marks. It is a knowing reference to tonal function that serves to highlight the fracture between past and present.

Having thus drawn attention to the role of certain tonal "implications of the line", the setting goes on to foreground the common-tone relationships that underpin the movement. Both the E^5 and subsequent G^5 of the melody are sustained over several bars, over a circling sequence of common-tone related triads. Through bb. 54-6 a series "V-I" cadences momentarily redirect the pillar chord back to A (now major) emphasising the common-tone relationship between the dual 'primary' sonorities on the larger scale.[20] Under the sustained G^5 triads of Eb and G major reinstate the C major sonority, most emphatically in the final, metrically reinforced cadence that sees the

[20] For Neil Butterworth (1998, p. 120) this particular passage "could have been taken directly from Vaughan Williams' *Fantasia on a Theme of Thomas Tallis*".

pillar chord in close position (b. 64). Between these two passages the secondary pillar chord on F# (now major) holds sway (b. 58), its common-tone association maintained via the previous A major pillar.

As noted above, the harmonic framework established by the primary pillar chords and their secondary, common-tone associates is afforded a lower priority in the last two settings of the Chorale theme (C^{iv} and C^{v}) which offer new harmonic perspectives (from b. 71). The two voice texture (strings only) of C^{iv} is concerned, once again, with exploring the relationship between melody and accompaniment, exploiting common-tone relationships and localised ('floating') patterns of triadic consonance and dissonance. The perpetual quaver motion presented by the 'organum' fifths of the inner part, and its often syncopated relationship to the outer voice presentation of the theme, allows little opportunity for 'grounding' on the familiar pillar chords beyond the initial evocation of the A minor triad in b. 71 (Ex. 5.5). Instead, the music is entirely dependent upon the familiar contours of the melody (albeit slightly elaborated) for its coherence; an unfettered display of 'floating tonality'.

The harmonic context for the final, climactic setting (C^{v}) in strings and woodwind, is derived from the bass line that proceeds in contrary motion against the parallel major triads of the melody (Ex. 5.6). The setting is entirely homophonic, with the bass pitches selected to produce a consistent vertical sonority (pc-set 4-22) in combination with the 'melodic' triad. The result is a consistently maintained harmonic context, divorced from the pillar chord framework established in the early part of the movement. As in the previous setting, however, a brief but significant concession is made, breaking the prevailing sequence of 4-22 sonorities to invoke the familiar A minor/C major polychord first heard in the combination of the A minor triad and melodic G^{6} (flute), closing the first half of C^{ii} (b. 38) . The chord occurs at the same point in the present setting (b. 102), following a rotating sequence of chords similar to those heard in C^{iii}. In this case the contextually defined pillar chord is heard to infiltrate (fracture) the prevailing, motivic, mode of organisation in a manner comparable with the tonal/contextual interactions encountered previously. A further centric association marks the return to the primary pillar chord in the Coda via a stepwise decent in the bass line from F# to C# (bb. 106-10), recalling both the C#-G#, Gb-Db established in the introduction (Ex. 5.3) and, in the C#'s anticipation of the A-E sonority in the horns, the A major/minor juxtapositions of C^{iii} (bb. 54-57). That such centric associations are so sparsely represented in this setting is a reflection of the remarkable change of perspective that this motivically oriented (4-22) harmonic presentation represents. The extent to which it offers a glimpse of a purely motivic reading of the movement as a whole will be explored further below.

The resumption of the introductory material that demarcates the Coda is initially grounded over the inversion of the original A-E sonority (E-A), before the return of the original A-E in b. 126 (Ex. 5.7).[21] A brief evocation of the opening bar of the Chorale theme ('C') in parallel fourths gives way to a further reminiscence of the C^{i} setting corresponding to bb. 29-32 (bb. 128-31). This final phrase of the Chorale theme is drawn out into a 'neo-Baroque' descending sequence (trumpets) that finally grounds on the secondary (E minor) pillar chord in b. 133. The C minor - D minor cadence figure that was a particular feature of the earlier settings now gives way to the Bb minor - C minor version, first heard in b. 39, as the movement draws to a close (bb. 134-37).

Summary

On the basis of this necessarily detailed account of the movement, it is now

[21] Typically for Schuman, the return of the introductory material is subtly altered. Initially inverted, the two parts are reinverted in b. 117, restoring the original framework of primary and secondary sonorities. The excision of two beats at this same point, however, repositions the metrical emphasis by half a bar throughout this passage.

possible to pull back, revealing the broad sweep of associative connections between primary and secondary pillar chords and the role played by the more clearly defined tonal allusions. Retaining the notational conventions used in previous examples, Ex. 5.8 shows a clear thread of associative continuity to be maintained throughout the movement as each section is grounded, to a greater or lesser degree, on the primary pillar chords comprising the A-E sonority and/or its common-tone extensions or substitutes (the first inversion A minor triad, the C major/A minor polychord, the root position C major triad and the A major triad). By extension, the process of common-tone association gives rise in turn to secondary sonorities that establish a contextually defined polarity around the primary pillars (as set out in Fig. 5.2). Numerous quasi-tonal allusions are heard during the course of the movement, frequently highlighting a sense of fracture between the prevailing associative structure and traditional tonal functions. Often underlying this sense of fracture is Harris's dissociation of root and tonal function, whereby tonal relations are defined in terms of the lowest pitch of an inverted chord. A striking example, additional to those considered above, occurs in the closing bars of the movement as the sustained Bb pedal assumes a quasi-dominant function in relation to the bass Eb of the previous C minor chord. As noted in Chapter 3, the tonal implication invested in the Bb pedal is resolved by the entry of the bass clarinet (on Eb) in the Toccata. The forces of tonal allusion are not always at crossed purposes with the predominant contextual structure, however. Elsewhere isolated patterns of traditional voice leading were seen to impart a cadential 'gloss' to a particular feature, as in the case of the juxtaposed C minor and D minor triads at the conclusion of C^{i}. The juxtaposition of these triads (in a 'tonally-defused' form) retains its cadential association as it reappears towards the end of C^{ii}, and at the end of the movement (bb. 129ff). The point of near fusion between the contextual and the tonal occurs at the climax to C^{iii} however, where the temporary replacement of the primary pillar chord of

A minor by a triad of C major, is approached via an overt cadential progression in C major. But even here the forces of tonality are never given full rein, effectively neutered by use of parallel triads throughout, highlighting and thematicising the play of old and new in a manner characteristic of neoclassical modernism.

The interplay of tonal allusion and contextual association is the most obviously neoclassical characteristic of the Chorale, but a further, less obvious interaction is signposted (thematicised) by the "architectural definition" of C^{v} in terms of the 'triad plus added-note' tetrachord 4-22. Of the nine possible sonorities produced by the combination of a major (or minor) triad and one other pitch-class, 4-22 has a significance beyond the associative harmonic framework heard to coalesce in the polychord 4-26.[22] In bridging the gap between harmony and melody (vertical and horizontal) 4-22 is representative of a strong unifying motivic force that pervades the movement in a manner seemingly at odds with the Stravinskian aesthetic of fragmentation projected in other domains (the apparent disjunction between those sections dominated by the pillar chord framework, and those projecting a consistent harmonic 'palette', for example). It is Schuman's concern for symphonic unity that is to the fore here, a concern symptomatic of his historicist orientation. By way of conclusion, the remainder of this chapter will examine the movement from this motivic perspective, with a particular interest in the extent to which it may be seen to conform to the previously established Genus 8-22/8-23 model (Chapter 4).

[22] Irrespective of inversions, the nine "triad plus added-note" sonorities are: #4: 14, 17, 18, 19, 20, 22, 26, 27, z29.

Motivic integration and the Genus 8-22/8-23

The setting that initiated this investigation of motivic association was, of course, C^v with its consistent focus on the 'triad plus added-note' tetrachord 4-22 (see Ex. 5.12). But why the foregrounding of 4-22, rather than any of the other triad/added-note tetrachords that recur throughout the harmonic texture of the movement? The answer to this question, it is proposed, lies once again in the "implication of the line itself." Exs. 5.2b and c present a segmentation of the Chorale theme, providing not only a taxonomy of the obvious primary segments into which the theme falls, but also an analysis of motivic sub-components within the clear phraseology of the theme.

The two-part structure of the theme reflects Schuman's characteristic concern for the controlled distribution of pitch-classes. The first part (to the fermata in b. 27) consists in the ten-note extended diatonic collection 10-5, with chromatic completion achieved in the first two pitches of the second half of the theme [Eb, Bb]. Although the 10-5 collection is familiar as the 'far point' in the systematic unfolding of the diatonic cycle that characterised so much of the Passacaglia, in this case it is not presented in terms of cyclic unfolding. Instead pitch-class distribution within the theme points to the 'verticalist' (triadic) orientation of the movement. The second half of the theme articulates the 'triad complement' collection 9-11 [C, C#, D, Eb, F, F#, G, A, Bb] exhibiting minimum intersection (six pitch classes) with a further 9-11 [E, F, G, Ab, A, B, C, Db, D] collection formed by the opening two phrases of the theme. The relationship again points to the importance of complement relations between the two halves of the theme (the 'missing' triad [Eb, Gb/F#, Bb] from the first part of the theme is contained in the first phrase of the second part), but it also suggests a concern for the integration of the horizontal and vertical dimensions. The triad (3-11) is, therefore, more than simply the lingua franca of diatonic verticality, it is a reflection (via the complement relation) of the motivic structure of the Chorale theme itself. However, the harmonic realisation of the "implication of the line" will be seen to achieve its clearest manifestation in the (C^v) tetrachord 4-22 (see below).

The reorientation in favour of a more vertical perspective is immediately evident in the transformation process that underlies the close relationship between the Chorale theme (C) and original Passacaglia theme (A), observed at the beginning of Chapter 3 (Ex. 3.1). While the opening phrases of the themes correspond closely, each forming the same set class (6-z48), Theme C reverses the last two pitches of the original Theme A hexachord, breaking the fifths cycle (G-D-A-E), and focussing attention (with the repetition of the pitch-class C) on the triadic "implication" of the hexachord (Ex. 5.9). The presence of the triad [E, C, A] at this point in the Chorale theme provides the springboard for much of the tonal allusion discussed above, in addition to its more obvious role as the melodic manifestation of the primary pillar chord that underpins the movement.

An explanation for the preoccupation with the 4-22 sonority in C^v is also to be found within the Chorale theme itself, most notably in the very first phrase. Ex. 5.2c reveals no fewer than seven manifestations of the 4-22 sonority embedded within the theme.[23] That they are of greater significance than the random product of a set-class "fishing trip" is confirmed in their manner of presentation. The opening phrase contains three forms of this sonority, the first of which [C, G, D, E][24] results from the omission of the chromatic inflection (in this case Ab) that was a characteristic feature of Theme A also (Ex. 5.9). This inflection stands almost as a cipher for the patterns of identity and non-identity that underlay the organisation of the music at its most fundamental level. In the case of Theme A its exclusion reveals the diatonic-cycle beneath (C-G-D-A-E),

[23] A further form [C, G, D, Bb] is a rather more obscure product of the the flute and trumpet lines in b. 30.

while in the present case its omission reveals the characteristic sonority 4-22 that is to take centre stage later in the movement. This initial, veiled presentation of the 4-22 sonority is immediately confirmed by the melodic succession [G, D, E, C], which in turn overlaps with the last four notes of the phrase [D, E, C, A], a further manifestation of 4-22. The two following phrases (to the fermata), display a similar allegiance to 4-22. The pentachord 5-30 forms a superset of 4-22 [A, Db, (F), B, E], before the intervallic properties of the opening phrase are revisited in the form of its hexachordal z-relation 6-z26. Not surprisingly, this hexachord in turn contains two interlocking forms of 4-22, [E, D, C, G] and [E, F#, D, B]. The second part of the theme is less densely populated in these terms, but the complementary triad [Eb, Gb/F#, Bb] referred to above, does embrace the 4-22 melodic succession [F, C, A, G].[25] With the multiple manifestations of this sonority within the theme so revealed, the combination of triad and bass in C^{v} to form successive 4-22 sonorities can now be seen to occupy an entirely logical place within the organisation of the movement, forming the sort of motivic continuity between the horizontal and vertical dimensions more commonly associated with a Schoenbergian musical modernism. As a characteristic set of the Genus 8-22/8-23, the 4-22 sonority is clearly strongly linked with the genus, and the extent and nature of the genus's representation across the movement will now be considered.

The sets resulting from the segmentation presented in Exs. 5.2 and 5.10 - 5.12 are collated below (Fig. 5.3) and are projected onto the Genus 8-22/8-23 model (Table 5.1, vol. II). The present discussion will focus upon specific features of the movement that appear to significantly enhance or undermine this generic reading.

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[24] For ease of indetification this, and immediately subsequent versions of 4-22 are presented in ordered form.

[25] The inversion property of the 4-22 tetrachord gives it a particular flexibility when employed in the form of 'triad plus added-note' as here. It can exist in both major and minor forms, both of which are heard in the first phrase of the theme: major - C, E, G + D, minor A, C, E + D. During the course of the movement the prevailing tendency to employ minor triads in the strings results in the formation of

Fig. 5.3 Chorale - Set data (from Exs. 5.2, 5.10 - 5.12)

Introduction bb. 1-21		
Melodic	#3: 3, 6, 7, 8	#4: 5, 11, 22, 23, 27
	#5: 11, 23	
	#7: 35	
Vertical	#3: 4, 11	#4: 11, 14
Collections		#6: 32
	#7: 23, 35	#8: 22, 23
	#9: 9	
C^{i}		
Melodic	#3: 2, 11	#4: 8, 16, 22
	#5: 30	#6: z26, z48, 33
	#7: 25	
	#9: 11	
Vertical	#3: 11	#4: 14, 18, 20, 23, 26
	#5: 27	
C^{ii}		
Melodic		#4: 22
	#5: 30	#6: z26
	#9: 11	
Vertical	#3: 11	#4: 14, 18, 19, 20, 22, 26, 27
C^{iii}		
Melodic	#3: 11	#4: 22, 24
		#6: z26, z48, 32
	#9: 9	
Vertical	#3: 11	
C^{iv}		
Melodic	#5: 30	#6: z17
	#7: 23, 35	#8: 23
Vertical	#3: 4, 5, 7, 9, 11	
C^{v}		
Melodic	#3: 6	#4: 11
	#5: 30	#6: z26, z48
	#7: 25	
Vertical		#4: 17, 22, 26
Collections		#6: 1
Coda		
Melodic	#3: 2, 6, 7	#4: 8, 11, 14, 22, 27
	#5: 7, 11, 20, 23	
Vertical	#3: 9, 11	#4: 14, 17, 18, 20, 22, 26
	#5: 27, 35	
Collections		#6: z3, 32
		#8: 22

Returning first to the Chorale theme (Ex. 5.2b), the segmentation reveals a significant leaning towards the 8-22 side of the genus via the secondary sets (affiliated only to the 8-22 cynosure) formed in the opening phrases (6-z48 and 5-30). This tendency is

inverted forms of the set. In the case of C^{v}, however, it is the major form that is used exclusively (a reference, possibly, to the first, major, form of the sonority embedded in the theme).

underlined by the 9-11 collections (similarly affiliated only to the 8-22 cynosure) that underpin each half of the theme. The primary segment articulated by the trumpet following the fermata forms one of only three sets in the entire movement that is not either a primary or secondary member of the 8-22/8-23 genus (7-25). That this may be attributable in part to a segmentational quirk is suggested by the presence of the primary genus member 6-33 formed prior to the arrival on F#. However, the crotchet rest before the flute takes up the 'rogue' F# requires that the segmentation should stand. Although a primary set, as a product of the 'gapped' (8-22) diatonic cycle, 6-33 appears to strengthen further allegiance to the 8-22 side of the genus. Examination of the secondary sets highlighted in Table 5.1 affirms that only two sets (the melodic pentachord 5-7, heard in the Coda, and the 8-23 collection itself) emanate from the 8-23 side of the genus. As previously, however, to exclude the 8-23 side of the genus as merely a subset of the 8-22 complex would be to misrepresent the very generative process of the music. There may indeed be a repositioning of emphasis towards representatives of the 'gapped' diatonic-cycle in the Chorale, but the diatonic cycle remains as the essential progenitor of the musical vocabulary.

The centrality of the 'complex genus' model is established unequivocally in the introduction (Ex. 5.10) in terms of the characteristic sets defined in Chapter 4.[26] The descending cello line with which the movement opens outlines the '8-22' characteristic tetrachord 4-22 at the very outset, before completing the '8-23' characteristic heptad 7-35 (the 'white-note' collection). The distribution of collections that form the broad 'ABA' pattern of the introduction also reflect the two sides of the genus, the inner ('B') collections forming the characteristic 'gapped' sets 7-23 and 8-22, while the outer ('A') collections reaffirm the familiar collections of the diatonic-cycle, 6-32 and 7-35. Further

[26] See Table 4.26.

characteristic sets are formed by the melodic elaborations of the primary pillar sonorities, notably 5-23 and 4-22 (bb. 3-4 and 6-8).

The set structure of C^{i} has been much discussed in relation to the Chorale theme. The vertical sonorities formed in conjunction with the triadic accompaniment are unremarkable, with the exception of the non-triadic 4-23 beginning b. 24 (Ex. 5.10). The most likely explanation for this departure from the triadic norm would appear to be a desire to maintain the descending bass line sequence towards C^{2} (b. 25). Of greater interest in the present context, however, are the changes to the melodic set structure encountered in the next setting, C^{ii} (Ex. 5.10). Immediately apparent is the omission of the Ab chromatic inflection from the opening phrase of the melody (bb. 31-32), revealing the underlying 4-22 sonority, and affirming the segmentation presented in Ex. 5.2c. With the melody retained in the flute throughout, the discrete rhythmic changes to the second half of the theme (b. 39) effectively collapse the original two phrase structure (trumpet, then flute) into a seamless 9-11 collection. This emphasis is retained in the ensuing transition to C^{iii} the melodic line delineating a second 9-11 collection. In the vertical dimension only 4-19 is not a primary genus member (its affiliation is to 8-22 alone). It occurs on the first beat of bb. 32, 36 and 43, each time underpinning a melodic formation that may be heard to 'resolve' onto a triadic, or (in b.43) primary genus, sonority.

The quaver rest in C^{iii} (Ex. 5.11), seen above to throw emphasis upon the 'dominant' G major triad in b. 53, marginally redefines the melodic segmentation, isolating the 4-24 subset in the second phrase of the melody (also an 8-22 oriented secondary set), but that apart, the first half of the setting focuses upon tonal allusion, as described above. In the second half of the setting attention is again drawn to set structure, however, as the two part, quasi-imitative, texture extends the original, cyclic head-motive [Eb, Bb, F, C] to form an extended diatonic transition to C^{iv}, outlining characteristic sets from both sides of the Genus 8-22/8-23 (4-22 and 6-32).

The next setting, C^{iv}, is notable as the most significantly transformed presentation of the Chorale melody (Ex. 5.11). The rhythmic attenuation of C^3/C^5 (the melody is presented in parallel in the outer voices) in b. 74 isolates a second 5-30 pentachord within the first phrase. By contrast, the second phrase (the source of the original 5-30) is now extended via a semitonal neighbour note motion (A-Bb-A) in b. 75 to form only the second set not embraced by the 8-22/8-23 genus, 6-z17. The third phrase of the melody (from b. 79^4) is significantly elaborated, employing melodic figures, familiar from the tonal tradition and extending the pitch-class content to form the diatonic cycle collection 8-23. The second half of the Chorale theme is then replaced by two descending scale patterns, the first outlining the diatonic collection 7-35, the second the 'gapped' diatonic collection 7-23, characteristic sets forming a balanced representation of both sides of Genus 8-22/8-23 in a manner similar to that observed in the transition from C^{iii} to C^{iv}.

In addition to the inescapable harmonic focus of C^{v}, two additional features provide particularly clear examples of Schuman's characteristic approach to the organisation and presentation of pitch materials in terms of identity/non-identity. In the first case (Ex. 5.12) a traditional suspension figure breaks the succession of 4-22 sonorities for only the second time (b. 105),[27] forming the primary genus member 4-17 before 'resolving' to the prevailing 4-22 sonority. This is immediately followed by a brief transition to the Coda that, in superimposing two diatonic lines (the trichord 3-6 in the cor anglais, and the descending scale figure 4-11 in the cellos), creates a momentary, and more decisively 'other' chromatic hexachord (6-1), the third and final non-Genus 8-22/8-23 set. As observed elsewhere, the juxtaposition of dissimilar materials at key moments of articulation, invoking Agawu's concept of "aesthetic" consonance, is entirely characteristic of Schuman's re-definition of traditional musical rhetoric.[28] This particular extreme of non-correspondence to the established (Genus 8-22/8-23) norm marks a fundamental structural juncture in the music, immediately preceding the return of the opening material in the horns. The return of the strings in b. 126 is similarly marked by the juxtaposition of two 3-7 trichords a semitone apart [G, A, E] and [Gb, Ab, Eb], forming the almost chromatic (but none the less 8-22 affiliate) hexachord 6-z3 (bb. 124-25).

This account of the Chorale's set structure clearly demonstrates the importance of a coherent motivic unity to Schuman's concept of the whole. From the broad generic model (Genus 8-22/8-23) that embraces the sonoric vocabulary of the symphony as a whole, Schuman focuses upon a particular construct, the 'triad plus added-note' tetrachord 4-22, forging links between the harmonic materials of the movement, with their firm basis on the triad, and the motivic structure of the Chorale theme.

Conclusions

In adopting Harris's prismatic view of the relationship between melody and harmony Schuman goes beyond an essentially colouristic reappraisal of "the implications of the melody" in terms of common-tone relations to present a multifaceted setting of the Chorale melody. Here aspects of centricity, tonal allusion and motivic association co-exist, side by side, in a constantly shifting kaleidoscope of relations which owe much to Stravinskian neoclassicism. In particular, traditional tonal

[27] The first was the pillar chord 4-26 (b. 102).
[28] Agawu (1989) is cited in Chapter 2, (p. 45).

relationships are isolated from the deeper levels of structure from which they traditionally derive their meaning. This "rhetorical" use of such conventions is identified by Chandler Carter (1997, p. 60) in Stravinsky's *The Rake's Progress*:

> Outside the seemingly natural environment of common-practice tonality, Stravinsky's arbitrarily-applied tonal conventions function rhetorically - i.e., they function primarily as archaic gestures that support and articulate the composer's play with musical forms. Herein lies a distinction from the more fluid tonal language of Hindemith, Milhaud, Prokofiev and others.

From a stylistic point of view Schuman's use of such devices is far less theatrical than Stravinsky's. For Stravinsky the plundering and reworking of "bits and snatches"[29] from the past was the very point, the *raison d'être* of the music, while Schuman submerges archaic gestures beneath a smooth and consistent stylistic voice that is his and his alone. The desire for a rather more traditional unity than that presented by Stravinsky is evident in the moments of fusion between the various modes of organisation outlined above. They exist side by side, but they also merge into what Martha Hyde (1996, p. 205), drawing on theories of anachronism in literary texts developed by Thomas Greene, has described as a form of "metamorphic anachronism". Hyde sees the criteria for successful "metamorphic anachronism" in music in the following terms:

> Is anachronism - that is, the conflict between period elements in a piece of music - put to use? Does a live phoenix spring from an imitation, or does only a corpse emerge, shrunken and mummified from the tomb, though perhaps ornamented with modern trinkets?

There can be little doubt that Schuman "puts to use" the historicist gestures that permeate the Third Symphony. The voice leading in the trumpet and flute (bb. 30-31) imparts a cadential function to the C minor - D minor chordal succession that is retained throughout the movement in the absence of its original, anachronistic impulse. On a larger scale, the harmonic 'progression' leading to the cadence in bb. 53 establishes a new primary pillar chord, supporting and reinforcing the contextual, and predominant, mode of harmonic organisation. Similar examples of "metamorphic anachronism" pervade the rest of the work, the timpani pedal as chromatic completion in Variation 2 of the Passacaglia being a prominent and obvious example (Chapter 3).

The picture presented here is a paradoxical one. Elements of discontinuity and fracture, not to mention the extended diatonic vocabulary, point clearly to a Stravinskian aesthetic, an orientation acknowledged by Schuman in his conversation with Richard Dufallo.[30] From this perspective the neoclassical orientation of the Third Symphony is unmistakable, not least in the use of architectural, non-developmental forms, nowhere more obvious than in the Chorale. Yet for Schuman (and other American symphonists) the Stravinskian aesthetic offered only partial answers to their modernist dilemma. Schuman's ties with the past, observed most clearly through the windows of tonal allusion encountered here, point to a distant, but unbroken, allegiance to *la grande ligne*.

The musical language of extended diatonicism, allied to an architectural approach articulated, above all, by thematic identity, allowed Schuman to create a clear and accessible music in tune with the social and critical climate of its time and place.[31] To this extent the Third Symphony represents a distinctive and eminently persuasive contribution to the Golden Age of American orchestral music. For the project of the American symphony to move forward, however, Schuman would need, however

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[29] Stravinsky, referring to *Oedipus Rex* as a "*Merzbild*, put together from whatever came to hand...the Alberti bass horn solo...the *Folies Bergeres* tune...and the Wagnerian 7th-chords...I have made these bits and snatches my own, I think, and of them a unity." Cited in Carter (1997, p. 61n).
[30] Cited in Chapter 2 (p. 47).

unconsciously, to realise the developmental and dialectic potential of his materials, addressing the criticism of Morton and Harrison cited at the beginning of Chapter 3. The seeds of this future development are apparent in Schuman's evident awareness of the motivic properties of the Chorale theme, while a further aspect of Harris's teaching, the concept of "autogenetic development" almost totally unrealised here, would play a crucial role also.

[31] Recall the discussion of demands for an accessible and distinctively American music associated with the Composer's Forum Laboratories in Chapter 1 (pp. 32-33).

PART 3:

AUTOGENETIC DEVELOPMENT AND DYNAMIC FORM - SYMPHONY NO. 6 (1948)

CHAPTER 6

AUTOGENETIC DEVELOPMENT AND THE SYMPHONIC "IDEA"

Schuman's Sixth Symphony, completed in 1948, presents a very different stylistic surface when compared to those works in the genre that followed the Third Symphony with such confidence and assurance.[1] A fundamental shift in Schuman's approach is represented most clearly in the adoption of a single movement form, employed here for the first time,[2] indicative not only of a concern for unity and cohesion, but also for continuity and development. In the interview with John Clark (1982, pp. 230-31), Schuman looked back on his symphonic output as a whole, characterising the symphony as a genre, and the single movement form in particular:

> I think of the symphony as the musical equivalent of the novel. A work requiring large forces. In the case of a literary work, multiple characters, complexity of theme, subsidiary ideas, main ideas, developmental devices, and it all comes out as a unified whole in some way [...] I think of a symphony as being complex, not necessarily complicated, but complex in that it has these multiple aspects to it. Whether its a one-movement symphony or several movements, to me is a matter of what you plan to get within an entity [...] [T]he Sixth and Ninth are definitely one-movement works in the sense that there is a continuum, and that to me is the essence of it, is there a continuum.

This sense of multiplicity is perhaps the most strikingly new feature of the Sixth Symphony. At approximately twenty-eight minutes in duration it is only marginally shorter than the Third Symphony, but it appears to present a far greater density of material. The resulting complexity accrues, above all, from the lack of a clear distinction between thematic and accompanying material. There are relatively few

[1] See Chapter 1.
[2] Although the impulse towards a single movement format is apparent in Schuman's withdrawn Second Symphony (1937). See Schuman's account in Clarke (1982, pp. 246-47).

elements that do not display recognisable thematic or motivic characteristics; a marked contrast to many of the accompanying patterns employed in the Third Symphony whose primary function was to provide a coherent diatonic backdrop to the thematic materials. This shift towards an all-thematic texture is symptomatic of a distinctly Schoenbergian response to the modernist dilemma, expressing a greater concern for unity within diversity, a continuation, rather than fragmentation, of *la grande ligne*.

In placing the Sixth Symphony in the context of Schuman's oeuvre there are two primary areas of concern. The present chapter is concerned with the process of development, and in particular the means by which new material is seen to emerge from, and is related to, a central unifying idea. This overtly organicist approach clearly draws on Schoenberg, and Schoenberg's concept of developing variation will be central to the analytical approach adopted here, but a more immediate influence from Schuman's perspective is the concept of "autogenetic development" expounded by Roy Harris. In the one-movement symphonies in particular Schuman sees,

> a constant autogenetic development of the materials which are constantly turning on themselves in some way, and spreading out or contrasting. You may have the equivalent of a number of different movements within a one-movement symphony, but they are all so related that there is never time for a pause, it's an on-going thing.[3]

A similarly organicist orientation may be detected in Flora Schreiber's (Schreiber and Persichetti, 1954, p. 47) account of Schuman's struggle to get started on the project. A commission from the Dallas Symphony League for a work to be premiered in February 1949 was initially planned as a Divertimento ("several short pieces in the manner of a 'pops' concert"), but through the months of June and July,

[3] Ibid., p. 233. Schuman is responding here to Clarke's association of the terms "continuum" and "flow" in relation to these works. Although Schuman does not clearly differentiate between "continuum" and "flow" (and Clarke does not pursue the matter) there can be little doubt that the process of "autogenetic development" described here is of central importance to the sense of unity and complexity essential to Schuman's mature view of the symphony.

> [n]othing came. August brought a change. Suddenly, springing full bloom, came a theme that he felt was exquisite. But it bore no relation to the work he had planned. What had come was an idea for a big work. The theme seemed to lead to a symphony and to demand a novel kind of one-movement structure. He was like a playwright with a character who has taken over the plot. At this point he knew that he had to abandon the preconceived notion and start once again with the "exquisite" theme as his germ idea.

Romantic notions as to the composer's "inspiration" aside, the symphony does present an opening statement (reiterated in various guises throughout the work) densely packed with both motivic and harmonic potential; an archetypal Schoenbergian *Grundgestalt*. From an initial examination of this opening statement two contrasting themes will be shown to emerge. The process of "autogenetic development" will be unravelled (employing an analytical methodology derived directly from Schoenberg's analysis of motivic development in his own work), demonstrating both an organic concern for unity, and an awareness of the need for difference in establishing a more truly symphonic dialectic.

The concept of the *Grundgestalt* as the source of the "idea" of the work is also central to the second area of concern, addressed in Chapter 7. Although contrasting thematic materials play a crucial part in the delineation of form (notably in the juxtaposition of fast and slow tempi), it is in the deployment of harmonic materials that the symphonic dialectic is most sharply drawn. Harris's idea of harmony as "architectural definition" was considered previously in relation to the Chorale movement of the Third Symphony (Chapter 5), but in the Sixth Symphony it is taken to greater lengths, forming a specific duality, an opposition in need of resolution (see below). Chapter 7 will chart the 'opposition' of distinctive harmonic materials within a portion of the work, tracing their origin to the opening statement and invoking genera theory to highlight the further integration of the vertical and horizontal dimensions.

A Schoenbergian perspective on Harris and Schuman

That insight into such an important facet of the musical language of two archetypal American symphonists should come, unknown (for there is no suggestion of influence here), from the pen of a composer so at odds with both the American musical establishment and the musical aesthetic that he saw it to represent, is both ironic and intriguing (more on this below). The usefulness of both Schoenberg's theoretical writings and his approach to motivic analysis as tools for the analysis of "autogenetic development" is suggestive of an unacknowledged (indeed, often denied) common philosophy with regard to the Romantic view of the autonomous work of art; a viewpoint central to the "Golden Age" of American music. That said, it would require a good deal of imagination to draw any immediate comparisons between the music of Schoenberg (at any stage in his career) and that of his American contemporaries, Harris and Schuman in the 1930s and 40s. Furthermore, Schoenberg's strained relations with the musical "establishment" and his low opinion of American composition teaching, is well documented. According to Alan Lessem (1988, p. 8), such teaching

> was bound to fall short of Schoenberg's standards, since it had been so strongly influenced by French neo-classicism, and the teaching of Nadia Boulanger in particular. Students coming under that influence would learn to be satisfied with manipulating a few simple devices so as to achieve a predetermined stylistic result; as he put it, "to create an external appearance, without asking about the inside."[4]

Whether Schoenberg would have viewed the teaching of Harris (himself a product of the Boulangerie) in these terms or not is a moot point. What is suggested, however, is that there is common ground to be found here, specifically with regard to Schoenberg's

[4] The quotation cited is from an unpublished letter drafted by Schoenberg in the context of a "heated exchange with Aaron Copland on what he saw to be the 'suppression' of his music by American composers, performers and musical organizations" (ibid., p. 21n). See also Lessem (1997).

theoretical writings on developing variation and the musical "Idea" (much of which stems from his time in America),[5] and the compositional process described by Harris as "autogenetic development." The analysis of the process of developing variation presented here will reveal that, far from presenting a superficial "external appearance" the substance of this music does indeed "ask about the inside."

There would appear to be no record of formal contact between Schoenberg and either Schuman or Harris. While Schuman's musical education began at the Malkin Conservatory in New York in 1930 (see Chapter 1) he had moved on by the time Schoenberg began to endure his well documented encounter with the establishment.[6] Similarly, Roy Harris studied at UCLA (c.1921) long before Schoenberg's tenure, and returned to teach there after Schoenberg's death (1961-71).[7] In terms of their respective career paths these figures appear to have passed like ships in the night. In the light of this, it seems unlikely that either Schuman or Harris would have been directly influenced by Schoenberg's ideas during the period in question.[8] Certainly no such

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[5] As is well known Schoenberg's theoretical writings stem from all periods of his career and exist in various stages of completeness. Of particular concern here are those that bear directly upon the topics of developing variation and the musical Idea, notably Schoenberg (1967), (1972), (1975), (1994) and (1995). Of these, *Fundamentals* (1967) dates from Schoenberg's time at UCLA (between 1934 and 1948), *Coherence, Counterpoint, Instrumentation, Instruction in Form* (1994) from initial work on a number of book projects begun in 1917, and "Analysis of the Four Orchestral Songs Op. 22" (1972) from early 1932. The various parts of *The Musical Idea* (1995) appear to be the product of work between June 5, 1934 and October 15, 1936, "written [...] probably variously on the train between Boston and New York, in his studio at the Ansonia Hotel, in Chautauqua, and in Los Angeles. The essays from *Style and Idea* (1975), "Brahms the Progressive" and "Bach" are slightly later (1947 and 1950 respectively).

[6] For Schoenberg's own account of his first year in the United States see "Circular to my Friends on my Sixtieth Birthday: September 13, 1934" (1975, pp. 25-9).

[7] See Stehman (1986).

[8] Writing of Harris's attitude towards his contemporaries Dan Stehman (1984, pp. 23-4) mentions his admiration for Prokofiev and Vaughan Williams in particular, in addition to a "guarded appreciation of some of his American colleagues, such as Virgil Thomson, Walter Piston, Howard Hanson, Elliott Carter, and Samuel Barber." Copland is also afforded particular prominence, although "they seemed to grow apart in their aesthetics over the years." The overall picture is of a fiercely independent figure maintaining a deliberate distance from contemporary developments. See also Stehman (1991). Equally, according to Christopher Rouse (personal correspondence, November 23, 1997), Schuman "[...] considered himself an intuitive composer, and he was very much opposed to systems when it came time to compose". (See also Chapter 1 re Schuman's lack of engagement with Schoenberg as composer or theorist). In this, of course, Rouse is referring specifically to serialism; the 'theory' of developing variation, meanwhile, is particularly in tune with the "instinctive" approach to composition so valued by Schuman (cf. Clark 1982, p. 238, cited in Chapter 1).

influence is implied here. What is apparent, however, is a marked similarity between Harris's compositional approach and Schoenberg's theoretical preoccupations.[9]

"Autogenetic development" and "Developing variation"

Writing in the programme note for the premiere of his *Symphony 1933* Harris describes the last movement as "a variation development of the theme, stated in the opening [...] in which the characteristics of the theme are extended into autogenetic melodic designs of varying lengths and contours."[10] In examining the process of "autogenetic development" in Harris's music, Dan Stehman outlines a number of procedures that can bear direct comparison with Schoenberg's principle of developing variation as it appears in his writings from around this time. Stehman (1984, pp. 26-27) describes a particular melodic type in Harris's music as

> [l]ong, slowly unfolding, nonrecurring melodies of an 'open-ended' character. These contain numerous phrases and [...] are usually launched by a seed-motive. [...] This type of melody spins out continuously, generally forming the basis of either a large section of a work or an entire composition. Each phrase of a melody of this type generally refers back either to the rhythm, and sometimes the contours, of the seed-motive or to the pitches and/or rhythm of the immediately preceding phrase or two. It is this category of melody which most truly represents Harris's so-called 'autogenetic' (self-generating) melodic technique.

Harris's own accounts of the process are difficult to pin down, at least in written form. The "autogenetic" idea was clearly important to him and exerted a significant influence on Schuman's work. In addition to the reference to "autogenetic development" cited above, Schuman drew particular attention to the "autogenetic" idea writing on the occasion of Harris's death. Recalling the impact of the *Symphony 1933*

[9] While these ideas may well have been "in the air" at this time, a more fruitful comparison between Schoenberg and Harris lies in their common reverence for and knowledge of the masterworks. In this regard, Harris was no less self-taught than Schoenberg.

[10] Cited in Stehman (1973, pp. 83-4). The première, by the Boston Symphony Orchestra under Serge Koussevitsky, took place on January 26, 1934.

he wrote: "For me the sounds were like no others I had ever heard, his wholly original 'autogenetic' concept of form, the orchestration so free and strong, the extraordinary beauty and sweep of the melodic material" (1979, pp. 54-6).

Schuman's remarks appear to suggest that the autogenetic principle goes beyond melodic elaboration, embracing the musical organism as a whole (the form), a view endorsed by Arthur Mendel in an article stemming from the earliest period of Harris's career (note again the organicist turn of phrase):[11]

> Roy Harris, instead of basing his work on novelty in the sensuous materials of the art, focuses his attention on the structure of the music. [He] is trying to work out an idiom in which the structure shall be based on the self-determined growth of the melodic material, not on any superimposed form [...] He feels that the composer of the future must free himself of these shackles. His music must be as cogent and logical and structurally perfect as he can make it. But its forms must be determined by its content. It must grow as a plant or animal grows, along lines dictated by its own inner necessity, not imposed on it from above.[12]

This interpretation bears comparison with Schoenberg's concept of the musical "Idea" and its ultimate manifestation in the body (form) of the piece: "I myself consider the totality of the piece as the *idea*: the idea which its creator wanted to present."[13] He goes on to speak of "a state of unrest, of imbalance which grows throughout most of the piece [...]. The method by which balance is restored seems to me the real *idea* of the composition."[14] Defining the concept of form "in its aesthetic sense" he refers to "elements functioning like those of a living *organism*."[15] Schoenberg's many and diverse statements on the nature of the musical Idea are summed up by Carpenter and Neff in similar terms: "The musical idea, the essence of the work, represents its total

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[11] Stehman emphasises the point, stating that "Harris' central concept of an autogenetic evolution of structure [...] strongly and consistently reflects his feeling that music is an integral part of the natural process of growth and development." (1973, p. 980). However, while the autogenetic idea is clearly a distinctive feature of Harris's music, it is perhaps Schuman who explores most fully the implications of the concept in the dimensions not just of melody, but also harmony.
[12] Mendel (1932), cited in Butterworth (1998, p. 83).
[13] "New music, Outmoded Music, Style and Idea" (1975, pp. 122-23). Interestingly, Schoenberg delivered an earlier version of this lecture in Boston in 1933 (or 1934). See (Schoenberg 1975, p. 518).
[14] Schoenberg (1975, p. 123).

dynamic, the balance of forces within the whole" (Schoenberg 1995, p. xix). The broader implications of the "'autogenetic' concept of form" will be considered in due course. A more straightforward introduction to autogenetic concept may be gained through a brief consideration of Harris's approach to melody.

Stehman (1973, p. 13) cites a "textbook example of Harris' principle of melodic construction" from the first movement of the early *Symphony – American Portrait 1929*, demonstrating the "evolution of a melodic line [...] from a single initial germ motive." Stehman's example (ibid., p. 1039) is reproduced as Ex. 6.1a. The development of the 'germ' 'motive x' is described primarily in terms of interval expansion (the initial semitone becomes a tone, the two intervals subsequently combining in the stepwise minor third of the fourth bar). This first phrase is then regarded as "a germ idea from which the entire first theme subsequently evolves"(ibid., p. 14), (Ia, Ib, Ic, Id in Ex. 6.1a).

These descriptions of the melodic process in Harris's music tally closely with Schoenberg's statements regarding the nature of the "basic motive" and the process of developing variation.[16] The following extracts illustrate the point:

> Inasmuch as almost every figure within a piece reveals some relationship to it, the basic motive is often considered the "germ" of the idea (1967, p. 8).
>
> Homophonic music can be called the style of "developing variation." This means that in the succession of motive-forms produced through variation of the basic motive, there is something that can be compared to development, to growth (ibid.).
>
> Music of the homophonic-melodic style of composition...produces its material by, as I call it, *developing variation*. This means that variation of the features of a basic unit produces all the thematic formulations which provide for fluency, contrasts, variety, logic and unity, on the one hand, and character, mood, expression, and every needed differentiation, on the other hand - thus elaborating the *idea* of the piece (1975, p. 397).

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[15] (Schoenberg 1967, p. 1). This passage is also cited by Cross (1980, p. 34n).
[16] It is important to acknowledge here that Schoenberg is referring to much more than simply melodic development. For Schoenberg the idea of developing variation was all pervasive, embracing the entire texture of a work.

A second characteristic of Harris' autogenetic approach is discussed by Stehman in relation to the second movement of Symphony no.2 (1934). In this example (Ex. 6.1b) Stehman (1973, p. 160) demonstrates "how an element of one phrase is used as a springboard for its successor."

There are clear resonances here with Schoenberg's illustration of "connective technique". In an excerpt from his Chamber Symphony, Op.9 (shown here as Ex. 6.2), he shows how the end of one phrase [G#, A, B, C#] also initiates the onset of the next phrase (marked 'a'). Similarly the motive D-C# (b. 5) initiates the subsequent phrase (marked 'b'). Schoenberg (1995, p. 139) calls the methods used here "*connective technique*" and "*linking methods*".

These examples, although necessarily rather brief, clearly illustrate a similarly "organic" view of the developmental process on the part of Schoenberg and Harris, at least with regard to melody. In order to assess whether this resemblance is anything other than superficial it will be necessary to examine the autogenetic process in much greater detail. For example, recalling Schoenberg's definition, to what extent is there "in the succession of motive-forms produced through variation of the basic motive [...] something that can be compared to development, to *growth*"?[17] Is the autogenetic process an integral part of what Schoenberg (1975, p. 397) would describe as the "Idea of the piece"? It is in an attempt to answer these questions that the two themes from Schuman's Sixth Symphony will be examined in detail.

It is perhaps worth reinforcing here that the purpose of the ensuing analysis is not to demonstrate any musical similarities between Schoenberg and Schuman at an empirical level. There are virtually none. The purpose rather, is to demonstrate the extent to which Schoenberg's thinking about music can provide an insight into the

[17] (Schoenberg 1967, p. 8) Emphasis added.

"autogenetic" process demonstrated in Schuman's music at a deeper, more immanent level. It is an examination of the music "from the inside." To this end it is necessary to consider (briefly) how Schoenberg's ideas might inform the analytical method.

Schoenberg and analysis

The view of Schoenberg's analyses as offering a tantalising glimpse of the process of developing variation without really delivering in terms of analytical rigour is refuted by Kofi Agawu. Reviewing Walter Frisch's (1984) study, Agawu (1988, pp. 99-100) writes:

> It is often said that Schoenberg formulated the notion of developing variation too vaguely and that he failed to provide demonstrations *in extenso* of how it works....I would contest the extent to which Schoenberg's analyses are ambiguous; in fact...we need not look beyond his essay "Brahms the Progressive" in order to form a fairly clear idea of what developing variation means.[18]

Citing Schoenberg's analysis of Brahms's String Quartet, Op.51, No.2, as a model in this regard, Agawu (p. 102) observes that

> the generality and flexibility in formulation of the initial 'idea' notwithstanding, the process is primarily an intervallic one, and only secondarily rhythmic. The generative process is mapped out in considerable detail, each successive interval interpreted variously as equivalent to, greater or less than the previous one. Segmentation is into phrases, which are in turn determined by temporal gaps as well as by harmonic articulation. Questions of hierarchy are not avoided: witness Schoenberg's (potentially remarkable) use of hierarchic notation in a number of places. Above all the presentation is graphic, which therefore recommends a curtailed verbal commentary in order to avoid duplication between duplicative media.

The emphasis upon the interval as a defining property in the process is also highlighted by Dahlhaus (1987, pp. 130-31), noting that

[18] This view is considered further in Dunsby (1997, p. 190).

> [t]he abstraction with which Schoenberg the analyst operated consisted as a rule in the fact that intervals or complexes of intervals appeared as the true substance of music, whereas other features of the composition, from rhythm through harmonic and metrical function to the delimitation of motives, were treated as the mere 'surface', more a matter of 'presentation' than of 'idea'.[19]

It is in the absence of overt functional tonality that interval structure and contour are thrown into sharpest relief as crucial elements in the process of developing variation. They assume a more prominent role in the presentation of the *idea* of the piece. Attempts to analyse developing variation in a post-tonal context have, not unnaturally, focussed upon Schoenberg's own compositions.[20] As will become apparent, however, Schuman's melody is no less reliant upon the manipulation of interval structure and contour, even if its particular brand of post-tonality is rather different to Schoenberg's. In his Op.22 radio talk, broadcast in 1932, Schoenberg (1972, p. 31) presents a step by step account of "the unconscious sway of musical logic" in the opening bars of the first song "Seraphita", where a "fixed motivic unit" comprising the intervals of minor second and minor third is shown to be "varied and developed in manifold ways" as the song progresses. Here again Schoenberg provides a template for further analysis. Specific transformation types are isolated in a systematic extension of Schoenberg's Op.22 analysis by Jack Boss (1992), in which he also attempts to demonstrate degrees of remoteness from an initial motive source.[21] The implications of Boss's work will be considered further below.

The broader "formal" implications of the musical "idea" have been examined in the context of terms of Schoenberg's First Quartet Op.7. Severine Neff (1984) considers the opening bars of the work (specifically bb. 1-3 of the opening violin line) to form a

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[19] Dahlhaus goes on to stress that, "the degree of abstraction depends or should depend on the specific character of the work. Whether it is appropriate to start out from an interval structure, a melodic outline or a specific rhythmic-diastematic shape can only be decided from case to case, not on the basis of general principle" (p. 132).

[20] The role played by developing variation in Schoenberg's serial music is examined by Haimo (1990).

[21] The important distinction between "temporal and substantive proximity" is suggested by Dahlhaus (1987, p. 133). However, as will become apparent, Boss is able to distinguish only two tangible degrees of remoteness here, and then only in relation to a single motive.

Grundgestalt. This "basic shape" takes the form of a series of interlocking pitch motives subject to an "endless reshaping", controlling not only aspects of motivic development in the individual parts, but also tonal regions and specific vertical formations. It is perhaps in this respect that some of the most striking similarities of approach in Schuman's work are to be found, notably in the opening bars of the Sixth Symphony.

The process of Autogenesis

Opening statement as *Grundgestalt*

The Sixth Symphony opens with a direct statement of its principal theme (Theme A), Ex. 6.3. It is this theme that forms the *Grundgestalt*, the "basic shape" from which, by the various processes of development, the "idea" of the piece is realised. Melodically, it comprises four distinct motives (a, b, c and d), partitioned by their distinctive instrumentation. As noted above, this opening statement also contains the essence of a harmonic duality that is to pervade the work. On one level it might be viewed as a straightforward contrast between the chromatic and the diatonic.[22] More specifically it can be seen in the form of two tetrachords (indentified by their prime forms), one chromatic, x, [0,3,4,7], and one diatonic, y, [0,2,3,7]; each afforded metrical prominence at the beginning of bb. 1, 2, 3 and 5. The remaining vertical sonorities are either subsets of x, [0,1,4], or distinctive diatonic formations, [0,1,6] and [0,2,5,7].

Of primary concern here are the two new themes, labelled B and C, heard to emerge over a series of passacaglia-like repetitions of Theme A (Fig. 6.1). In terms of their rhythmic and intervallic characteristics (not to mention their timbral presentation) the two themes are strongly contrasted (see Exs. 6.4 and 6.9). The contrast is deliberately attenuated by the superimposition of Theme C over a further presentation of Theme B (bb. 25-30). The resultant stratification foregrounds the very issue of contrast and opposition, a synchronic presentation of the essentially diachronic dialectic played out over the course of the work. Ultimately each theme will be shown to reflect different aspects of the *Grundgestalt* through the process of autogenetic development. It is Theme B however, that provides the subject for the detailed analysis of the variation process.

Fig. 6.1 Distribution of themes, bb. 1 - 25

	b. 1	b. 9	b. 17	b. 25
Theme C				T0
Theme B		T0	T2	T3
Theme A	T0	T6	T8	T9

The development of Theme B: a syntagmatic approach

The earlier discussion of Schuman's musical language (Chapter 2) revealed two recurrent topics: the "instinctive" nature of the compositional process, and the importance of melody.[23] Describing his "absolutely chronological" approach to composition, Schuman recalled a conversation with Copland:

> I remember Copland was astonished when I told him how I worked - he couldn't believe that I, like himself, did not write an ending section here, a middle section there. But I have almost never done that [...] I have complete confidence in the ability of my musical instincts to carry me from one point to the next (in Ramey 1980, p. 17).

This instinctive approach can be clearly heard in the gradual unfolding of Theme B (Ex. 6.4). It is typical of the sort of "[l]ong, slowly unfolding, non-recurring melod[y]

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[22] A view put forward by Persichetti (in Schreiber and Persichetti 1954, p. 85), and considered further in Chapter 7.

of an 'open-ended' character" described by Stehman above. It appears to be in a constant state of flux, or (more aptly) 'evolution', literally emerging, in the first violin, from the cor anglais G^4 of b. 7. Small motivic units interlock and transmute with, at first sight, little sense of repetition. The economy and concision of the motivic working brings to mind Schoenberg's (1975, p. 415) definition of musical prose: "a direct and straightforward presentation of ideas, without any patchwork, without mere padding and empty repetitions." From an analytical perspective such instinctive compositional approaches offer an intriguing challenge. The intuitive unfolding of Theme B offers few clues in terms of recognisable patterns or principles of organisation. Attempts to second guess the intuitive process can only be haphazard, producing, at best, one of many possible analytical interpretations. Ironically, it is only by eliminating the intuitive from the analysis that the instinctive process of autogenetic development is revealed.

The ensuing attempt to divorce the analytical process from a priori assumptions is resonant with Jean-Jacques Nattiez's concept of the "neutral level" as outlined in his theories of musical semiology.[24] By subjecting Theme B to a systematic, process of motivic classification and generalisation it should be possible to reverse the autogenetic process, working back from the multiplicity of 'surface' detail, through a progressively more inclusive categorisation of pitch materials to the motivic source (or sources); the root of the autogenetic process. This "neutral" taxonomy may then reveal particular patterns or processes that may, or may not, confirm the perception of the autogenetic principle at work in Schuman's melody. Parallels with Schoenberg's own analytical practice will be drawn as the analysis proceeds.

Fundamental to Schoenberg's view of development is the "smallest common multiple" (1967, p. 8), the motive. In characterising the nature and role of the motive he writes: "The *motive* generally appears in a characteristic and impressive manner at the

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[23] Cited were Ramey (1980, p. 17), Broder (1945, p. 19) and Persichetti and Schreiber (1954, p. 51).
[24] See, for example, Nattiez (1982).

beginning of a piece. The features of a motive are intervals and rhythms, combined to produce a memorable shape or contour which usually implies an inherent harmony" (ibid.). Under the heading "Treatment and utilisation of the motive", he then outlines two principal modes of repetition:

> *Exact repetitions* preserve all features and relationships. Transpositions to a different degree, inversions, retrogrades, diminutions and augmentations are exact repetitions if they preserve strictly the features and note relations.
> *Modified repetitions* are created through variation. They provide variety and produce new material (motive-forms) for subsequent use.
> Some variations, however, are merely local 'variants' and have little or no influence on the continuation (ibid., p. 9).

The role of such 'local variants' was clarified in Schoenberg (1994, pp. 38-9):

> One can distinguish *two methods of varying* a motive.
> With the first, the variations usually seem to have virtually nothing more than an *ornamental* purpose...
> The second method can be termed *developing variation*. The changes proceed more or less directly towards the goal of allowing new ideas to arise.

As noted above, a particular feature of this type of "autogenetic" melody is its continuity. It is often impossible to determine where one motive or phrase begins and another ends. By invoking the trichord as the "smallest common multiple", and subjecting the melody to a systematic process of imbrication, patterns of repetition and variation will emerge, independent of subjective analytical decisions.[25] The categorisation of these elements will prioritise characteristics of interval and contour.

[25] Successive units of three notes allow for meaningful comparison of both contour, interval content and order relations, while also facilitating further reduction and categorisation in later stages of the analysis. Significantly, Schoenberg's Op.22 Radio Talk (1972) also takes a trichordal unit as the focus of its enquiry. As Boss (1992, p. 132) points out, "Schoenberg uses [the term] 'fixed motivic unit' [...] to represent all forms characterised by 'the sequence of minor second and third,' and asserts that this class of successions can be 'varied and developed' to create new motive-forms."

Taking a lead from Schoenberg, a *motive* will be defined as a distinctive pattern of pitches characterised by repetition and, possibly, variation (labelled a, b, c, d etc).[26] On the smallest scale a motive may take the form of a trichord, subject to repetition and subsequent development. By the same token a number of trichordal building blocks may combine to produce larger motivic units. The decision concerning what may, or may not be regarded as a motive rests upon the prominence with which it is displayed and its position at the head of the development process.

Schoenberg's description of "motive-forms" and "local variants" gives the impression of a relatively straightforward two tier development process. In fact the network of relationships between motives, motive-forms and subsequent variants is often far from straightforward. This is particularly so in the case of the 'open ended', 'autogenetic' type of melody described here. As the motive-forms and variants proliferate, it becomes increasingly difficult to trace clear associations. In theory the chain of association is almost limitless, and the status of each element within the chain can only be established in the context of the whole. As a result the terms 'motive-form' and 'variant' (local or otherwise) with their hierarchic connotations, will be avoided until all such relationships have been clearly established.

Emerging in b. 7, Theme B (Ex. 6.4) unfolds over a second, passacaglia-like statement of Theme A (bb. 9-16) before undergoing a further varied presentation over a third, transposed statement of Theme A (bb. 17-24) as outlined in Fig. 6.1. This varied repetition of Theme B (also a tone higher, thus preserving the harmonic relationship with Theme A[27]) gives the impression of a seamless continuation of the development process. The analysis will reflect this continuity, tracing the development process

[26] Compare Schoenberg's "[The] musical motive is a sounding, rhythmicized phenomenon which, by its (possibly varied) repetitions in the course of a piece of music, is capable of creating the impression that it is the material of the piece....The *most important characteristic of a motive is its repetition.*" [Schoenberg's emphasis](1994, pp. 28-31). Also cited by Carpenter and Neff in (Schoenberg 1995, p. 384).

through the melody as a whole (bb. 7-24). Each stage of the analysis will focus upon a progressively more inclusive taxonomy of the motivic materials, allowing significant patterns of correspondence to be revealed.

Ex. 6.4 presents a trichordal imbrication of the entire melody (bb. 7-24), while Table 6.1 (vol. II) presents the resulting trichords in terms of their pitch interval and contour profiles (ICP). Ex. 6.4 and Table 6.1 highlight the diastematic diversity at the heart of the melody. The imbrication produces 115 segments, all but two (6 and 105) containing three different pitch classes. Over half of these segments (seventy-one) have different pitch interval and contour profiles.

An important aspect of Schoenberg's view of the development process is the balance between variation and repetition central to the concept of "coherence".[28] Before examining processes that contribute to the diversity in Theme B, it is important also to consider patterns of identity in the unfolding of the theme. Close scrutiny of Table 6.1 reveals a number of areas where particular combinations, or strings, of trichords recur at more than one point in the melody, projecting larger motivic units that stand out from the predominantly non-recurring melody. Table 6.2 (vol. II) isolates these recurring sequences (assigning a particular motivic status to these patterns at this stage would be premature); for purposes of identification they are numbered i - viii (Ex. 6.5). Five of the patterns thus isolated are the result of combinations of two stepwise trichords, producing unremarkable four note sequences (i - v). A further two (vi and viii) result from more characteristic, or distinctive trichordal combinations, but they each recur only once, and then in forms obscured by octave displacement (the bracketed segments). The only characteristic pattern of more than four pitches to achieve prominence by repetition is that formed by segments 30-35 and 88-93 (vii). Not only does it emerge

[27] The statements of Theme A at bb. 9 and 17 both present the sonority 'y' (0,2,3,7) and its trichordal subsets as the harmonic 'norm'. Against this essentially static harmonic backdrop it is the unfolding of Theme B that provides the musical impetus. See Chapter 7.
[28] See for example (Schoenberg 1994, pp. 60-65).

intact, with regard to both interval content and contour, from the 'fog' of motivic elaboration that characterises the varied repetition of Theme B, but it is also heard as the defining feature of a reminiscence of Theme B later in the work (bb. 41-42). It is clearly 'motivic' in its own right, and as such is designated motive 'e'. If the bestowing of motivic status seems a little arbitrary at this stage, further evidence in support of this decision will emerge as the distillation of pitch materials proceeds. Further stepwise sequences highlight the correspondences between the original statement of Theme B (bb. 9-16) and its elaboration (bb. 17-24).

While these observations are based entirely upon patterns of interval and contour, it is significant that these brief patterns of repetition also form the basis of the relatively few rhythmic patterns reiterated during the course of the theme. Ex. 6.6 illustrates these patterns, revealing the emergence of rhythmic paradigms most notably from motive e and the stepwise pattern iv - v. The two opening phrases of the theme are also associated by strong rhythmic and metric correspondence, while the  rhythm introduced in b. 17 (segments 55-56) goes on to form a new strand of development exclusive to the varied second statement of the theme. Clearly rhythm also has a significant part to play in the development process and the coherence of the whole.

Having examined aspects of similarity and coherence within the structure of Theme B, attention now shifts to consider the nature of the development process. Table 6.3 (vol. II) presents a second stage in the progressive generalisation of the trichordal segmentation. Pitch intervals are reduced to interval classes (e.g. <–11+2> becomes <+1+2>). Segments are then grouped by common interval class content (e.g.<–1+2><+2–1><–2+1>) and contour type (e.g. <++>/<––> and <+–>/<–+>). A conscious decision has been taken here to prioritise interval-class over contour. The resulting compromise provides a valuable categorisation midway between the seventy-one ICPs of Table 6.1 and the indiscriminate reduction of all the trichords to a 'normal order', revealing little of the developmental chain of events. A similar approach is adopted by Schoenberg in his Op.22 analysis (1972). Octave displacement forms the first of three categories of development identified by Boss (1992, pp.132ff), of which more below.

The first appearance of each new interval-class and contour profile (I-CCP) is highlighted in Table 6.3. For example, I-CCP **+1+2** is first heard as segment **1**. The original ungeneralised forms appear in brackets above the respective I-CCP, with the corresponding segment also appearing in brackets, thus (−11+2) corresponds to segment (7) and (+13+2) corresponds to segment (64). Each of the resulting 25 classes can be seen to represent either a new motive and subsequent motive-forms, or a specific motive-form and subsequent variants. Any attempt to distinguish between these two categories at this stage could only be a subjective one. Thus the I-CCP +1+2 (segment 1) forms the paradigm for subsequent forms based upon all possible permutations of ic 1 and ic 2 and the contour profile <++> or <—>. It is the generator, or source, of subsequent variants. The variables include octave displacement (bracketed), or permutations of the interval content and contour type (for example +2+1,−2−1 and −1−2).

Ex. 6.7 illustrates the 25 generalised I-CCPs at the heart of the developmental process. Each trichordal formation represents the first manifestation of a new, previously unrealised, I-CCP. They represent what Schoenberg might have termed "something that can be compared to development, to growth." The relationships between these formations, notably the "autogenetic" overlapping that sees one emerge from another and the substantive differences between them, will be considered below. Of more immediate concern is their temporal distribution through the course of the melody as a whole.

This broad picture is presented as Fig. 6.2 (vol. II), where the occurrence of the 25 I-CCPs and their variants (the vertical, paradigmatic, axis) is plotted over the course of the 115 segments (the horizontal, syntagmatic, axis). They are linked by a connecting line, effectively dramatising the ebb and flow of the development process as the melody unfolds. As might be expected, the rate of 'growth' is greatest in the initial statement of Theme B in bb. 7-16. (The intensity of the development process is reflected in the overlappings seen in Ex. 6.7). Furthermore, the process can be seen to be goal-oriented, culminating in the distinctive motive e before the stepwise pattern of I-CCPs 1 and 2 is reasserted. (Patterns of recurrence identified in Table 6.2 are indicated below the syntagmatic axis). Predictably, the process of development in terms of new I-CCPs is seen to slow in the elaborated repetition of the theme (from b. 17). Much of the elaborative material comprises variants of previously heard I-CCPs. Six new forms do occur, however, culminating in I-CCP 105 (notable as one of the two trichords containing only two pitch classes) before a corresponding return to the stepwise patterns I-CCP 1.

These patterns of expansion and retrogression can be seen to articulate the form of the melody. Motive e represents the culmination of this expansion in the initial presentation of the theme before a return to the stepwise type i - v motivic patterns. The second statement (from b. 17) takes up the process of expansion where motive e left off, culminating in segment 105 before a corresponding return to type i - v motivic patterns. The impression of motivic expansion, of "autogenetic development", is aided by other factors. It is reflected in the general contour of the theme, beginning on G^4 and rising steadily to C^6 marking the onset of motive e. A low point of $C\#^4$ is followed by an inexorable stepwise ascent to E^6. The elaborated restatement is heard a tone higher and follows a similar contour profile. Combined with the increased rhythmic activity and shorter note values that characterise the theme from b. 17, the overall impression is inevitably one of expansion and growth.

Degrees of difference: some substantive measures

Several important questions remain to be addressed. While the above account provides a clear syntagmatic view of the autogenetic process, what is not revealed is the "substantive" nature of the relationship between the various categories of 'motivic' material. To what extent is it possible to determine not only the precise relationship between one I-CCP and another, but also the degree of difference between them? A second question relates to autogenetic development as a manifestation of the musical "Idea". Can Theme B be heard as a working out of a particular aspect, or aspects, of an initial *Grundgestalt*? Here again, Schoenberg's own analyses can provide a valuable point of departure. Finally, is the impression of 'growth' described above mediated solely by temporal proximity, the fact that the proliferation of motive-forms and variants is perceived in a particular order through time?

A response to the first of these questions, is to be sought in Ex. 6.7, where the course of development from one I-CCP to another is often highlighted by their close proximity. This 'autogenetic' overlapping sees one new form emerge from another. Thus the overlap between segment (I-CCP) 1 and 2 introduces interval expansion (<+1+2> has become <+2+2>). The process of interval expansion continues to form segment 4 (<+2+2> has become <+2+3>). Segment 5 marks a significant development in terms of contour, invoking the (<+–>/<–+>) type. While it clearly overlaps with segment 4, the origins of segment 5 can also be traced back to segment 1, invoking both inversion (<+1+2> becomes <–1–2>) and rotation (<–1–2>, pitches FED, becomes <+3–1>, pitches DFE). While these associations can be drawn intuitively up to a point, what is required here is a systematic means of plotting the transformation of one form into another. Four categories of transformation are identified in Schoenberg's Op.22 Radio Talk by Jack Boss (1992, pp. 132ff).

The "motivic categories" are isolated from Schoenberg's account of the motivic development of the "fixed motivic unit" characterised by "the sequence of minor second and third" in the first song "Seraphita". Category - A comprises all "the two-interval successions generated by combining ordered pitch intervals +1 or −1 with +3 or −3." Boss illustrates eight possible combinations (Fig. 6.3).

Fig. 6.3 (Boss 1992, Table 1) Motivic Category - A

<−1, +3>	<−1, −3>	<−3, +1>	<−3, −1>
<+1, −3>	<+1, +3>	<+3, −1>	<+3, +1>

Motivic Category - B incorporates "an octave complementation of one or both ordered pitch intervals of a Category - A form." (Thus either, or both of the intervals in the eight combinations of Category - A can be subject to octave displacement, giving rise to twenty-four new forms). Motivic Category - C is perhaps the most far reaching, involving the reordering of the constituent trichord pitches, and resulting in sixteen new forms. Finally, Motivic Category - D allows for the expansion "by semitone [of] one or both ordered pitch intervals of the original form. Interval expansion gives rise to twenty-four Category - D forms" (ibid., pp. 132-33).

While these categories are undoubtedly of value in tracing the means by which motivic material is transformed, they provide only a limited account of the 'distance travelled' in terms of the extent of transformation involved. By considering the number of features of a motive that are changed by each operation Boss demonstrates increasing remoteness from the original (Category - A) through Category - B, to Categories - C and

- D, both of which appear to be equally remote.[29] This classification of remoteness enables useful observations to be made regarding the common source motive in Schoenberg's "Seraphita". Problems arise, however, in dealing with a more extensive network of motivic association, such as that found in Schuman's melody. As Boss acknowledges, "[t]wo or more motives would create two or more different scales of remoteness which would overlap at many points, making it impossible to determine the direction of development in successions of motive-forms" (ibid., p. 132). It is against this background of uncertainty that the relationships between the 25 I-CCPs of Ex. 6.7 are now examined.

Schoenberg's octave displacement operation (Category - B) has already been incorporated into the generalisation process from ICP to I-CCP. The admission of succession-class (Category - A), pitch reordering (Category - C) and interval expansion (Category - D) should facilitate substantive connections between the 25 I-CCPs of Ex. 6.7, finally isolating the motives and motive-forms of Theme B.

Table 6.4 illustrates the five families of I-CCPs created by application of Schoenberg's categories of variation. Segments 1, 14, 25, 32 and 35 (motive-forms a1, a2, a3, a4, and motive e, shown in column 3) can be seen to generate the other I-CCPs in the table by the process of transformation shown in column 5.

As noted above, motive-form a1 (segment 1) is related to segment 2 by interval expansion (<+1+2> becomes <+2+2>), a Category - D transformation. Segment 14 (<+2+4>) cannot be formed as the result of any category of transformation on motive-form a1. It forms a new motive-form (a2) which in turn gives rise to further variants, for

[29] (Boss 1992, pp. 135ff). The aspects examined are: Ordered pitch interval succession, ordered pitch class interval succession, interval-class succession, consecutive unordered pitch-interval set, consecutive interval-class set, total interval-class content and melodic contour. Boss demonstrates that "Octave complementation [Category-B] preserves the most aspects of the original, four in all; pitch re-ordering [Category-C] preserves only the total interval-class content of the original form; and interval expansion [Category-D] preserves only the melodic contour."

Table 6.4 - Theme B motive-forms and transformations

Segment	I-CCP	Motive-form	Derivation	Transformation Category
1	+1+2	al		A
2	+2+2		(al)	D
4	+2+3		(al)	D
5	+3−1		(al)	C/D
6	−1+1		(al)	D−
14	+2+4	a2		A
15	+4−2		(a2)	A
17	−1+2		(al)	A
21	−1−3		(al)	D
24	−2−6		(a2)	C
25	−6−1	a3		A
26	−1−1		(al)	C/D−
29	−6+5		(a3)	C
30	+5−2		(a2)	D
31	−2−5		(a2)	D
32	−5−5	motive e		A
35	−6−3	a4		A
49	−3+2		(al)	C/D
53	+4+1		(a2)	D−
62	+6−2		(a2)	C
69	+5+6		(a3)	C
78	+1+5		(a3)	C/D−
79	+5−4		(e)	D−
94	−3−3		(a4)	C
105	+2−2		(al)	D

example segment 24 (<−2−6>) by Category - C transformation. Segments 6, 26, 53, 78 and 79 invoke a slightly relaxed interpretation of Category - D transformation, interval contraction by semitone (D−), as opposed to expansion.[30]

Having isolated four 'a-type' motive-forms it is now possible to address the second question, the origins of Theme B in the opening *Grundgestalt*. The labelling of these motive-forms is, of course, no accident. They are derived from motive a (Ex.6.3) the motive that "appears in a characteristic and impressive manner at the beginning of a piece." (Schoenberg 1967, p. 8). The numbering of the motive-forms corresponds to their order of appearance in the melody. However, in terms of their substantive relationship to motive a it is motive-form a2 (+2+4) that bears the closest resemblance

[30] In determining the products of Category - C transformations octave equivalence is invoked in accordance with previous practice, thus contour profiles of +6 and −6 are deemed equivalent.

to motive a (–2+2–4). It is a Category - A transformation of the pitch interval contour (+2–4).

This apparently counterintuitive arrangement is explained when Theme B is re-examined in the context of its confluence with the passacaglia-like repetitions of Theme A (see Fig. 6.1). The Theme A 'cycle' begins in b. 9 and again in b. 17, marking the 'real' onset of Theme B (b. 9) and its subsequent elaboration (b. 17). Viewed in this light, bb. 7-8 of Theme B form a 'motivic anacrusis' absent from subsequent repetitions. Motive-form a1 thus anticipates the motivic substance of Theme B in both temporal and substantive terms.[31] Autogenesis is seen articulating the formal delineation of the thematic presentation, with the perception of a2 as the hub of the autogenetic process emphasised by its position (immediately followed by its Category - A transformation, I-CCP 15) at the peak of the rising phrase (b. 8^3 to b. 10^2).

The substantive relationships between motive-forms have further formal implications. Ex. 6.8 illustrates the network of transformations that link the motive-forms via intermediate variants through the hub of a2.[32] All but one are related to a2 by two, roughly equal degrees of transformation (a1 to a2 by two Category - D transformations, a2 to a3 by C and D–, and a2 to a4 by C and D). It is thus possible to trace the process of autogenesis from motive a, via motive-form a2 and on through the remaining 'a-type' motive forms. Only one motive-form (e) stands in isolation. The prominence of motive 'e' is clear; it is the only large motivic unit to shine through in the elaboration of Theme B (Ex. 6.5), and at its heart lies the I-CCP (–5–5) effectively isolated from the 'a-type' motive-forms at the heart of the autogenetic process. In

[31] Confirmation of the unique status of this anticipatory passage can be heard in its return in the distinctive timbre of solo trumpet (bb. 418-20) heralding the central Adagio of the work (b. 421).
[32] The transformation of a1 into a2, for example, takes place in two stages. <+1+2> is transformed in the first instance into <+2+3> by operation D. A further Category - D transformation transforms <+2+3> into a2 <+2+4>. The mediating <+2+3> variant is heard as segment 4, one of the original 25 I-CCPs.

tracing its origin in the *Grundgestalt,* it is necessary to look no further than the harmonic duality to which attention was drawn in the initial assessment of the symphony's opening statement. It may be heard as a melodic realisation of the 'fourths' chord [0,2,5,7] that ends the harmonic presentation of the theme in b. 6, and more specifically as a subset [0,2,7] of one of the two opposing sonorities denoted in Ex. 6.3, sonority y [0,2,3,7].

Summary

From this exhaustive examination of the autogenetic process it is clear that Theme B may be viewed in terms of a closely controlled (albeit "instinctive") composing out of specific 'ideas' inherent in the *Grundgestalt* Theme A. By reversing the paradigmatic train of generalisation it is possible to trace the development process from a 'source' motive a, via the motive-forms of Ex. 6.8 and on through a network of variants (the twenty-five I-CCPs of Table 6.3) which spawn still further local variants (the ICPs of Table 6.1), accounting for all 115 of the trichords originally described. This stratification of the diastematic materials enables the emergence of new ideas, the process at the heart of Schoenberg's principle of developing variation, to be charted as the theme unfolds. In this sense the experience of the melody unfolding through time reflects Schuman's own account of his "absolutely chronological" approach to composition. The syntagmatic axis of Fig. 6.2 shows the development process to be carefully paced, contributing to the overall impression of growth and expansion reflected in the steadily rising pitch of the melody and the reduced rhythmic values from b. 17. Furthermore, patterns of growth and regression articulate the form. The contrasting motive 'e' is approached by a steady, incremental pattern of growth. With this goal achieved the melody closes with a return to its 'roots' (I-CCPs 1 and 2) before resuming the development process at a more measured pace where it left off (b. 17).

Less easily charted is the substantive progress of development. Yet here too a limited consideration of the relationships between motive-forms (Ex. 6.8) serves to confirm an intuition regarding the anticipatory function of the opening phrase and, once again, the significance of motive 'e'. The analysis exposes the inner workings of the "'autogenetic' concept of form".

Unity and diversity

It is against the backdrop of this finely wrought process that Theme C intrudes (bb. 25-30),[33] providing a stark contrast by distinguishing itself from Theme B in almost every parameter (Ex. 6.9). Skittish, often syncopated rhythms in predominantly semiquaver and demisemiquaver units are heard over further transpositions of Themes A and B (see Fig. 6.1) creating a sense of rhythmic stratification (further reinforced by the notational convenience of two 3/4 bars in the flute to every 3/2 bar in the rest of the orchestra) that effectively divorces the new material from the established cycle of thematic repetition. As Themes A and B flow on, apparently regardless, there is a sense in which Theme C is heard as peripheral to, or divorced from, the musical material that has prevailed thus far.[34] In addition to the obvious differences in rhythm and timbre, Theme C also abandons the seamless continuity that characterised Theme B in favour of a fragmented phrasing and rhythmic disjunction that appears to owe much to jazz, and, perhaps more specifically, Be-Bop.[35] That Theme C is 'different' is clear, but what is the precise nature of that difference? Does it penetrate beneath the surface, to the

[33] The term is deliberately chosen. Contrast the 'intrusion' of Theme C with the 'emergence' (from G^4) of Theme B.
[34] A reading supported by Irving Kolodin (1999, p. 182): "In extent and variety [Theme B] promises much, especially as contrasted with a sportive rhythmic idea (in piccolo and flute) [Theme C] which mocks its solemnity, but does not disturb its poise."

motivic level, or is it (recalling Dahlhaus) "more a matter of 'presentation' than of 'idea'"? The answers to these questions may offer a valuable insight, not only into the centrality of the development process to Schuman's vision of a dynamic symphonic form, but also into the nature of a more specific and pervasive duality at the heart of the work.

Adopting an identical methodology it is possible to expose the development process, revealing striking similarities between the two themes in terms of the proliferation of motive-forms proliferate and subsequent variants. Table 6.5 (vol. II) reduces the one hundred and twenty trichordal segments of Theme C (Ex. 6.9) directly to thirty-one I-CCPs and variants (the preliminary reduction to seventy-four pitch interval and contour profiles is not shown on this occasion).[36] As before, the process of autogenetic development sees new I-CCPs emerging throughout the theme, with few areas of repetition (see below). Once again the most rapid proliferation of new formations occurs towards the beginning of the theme, where the end of one I-CCP often merges with the beginning of the next (the bold segment numbers of Table 6.5 may be traced to their location in Ex. 6.9). The primary concern here, however, is not the process of development, but the motivic substance revealed by the progressively refined taxonomy.

Table 6.6 shows the derivation of the thirty-one 'motive-forms' that head each category in Table 6.5. It is immediately apparent that each form may be derived (by the familiar categories of transformation) from those already encountered in Theme B (Table 6.4), and, consequently, from the same sources within the *Grundgestalt* Theme

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[35] Recall Schuman's response to the question of jazz influence in *Judith*: "That's no influence, that's jazz" (see Chapter 1, p. 35n).
[36] Note that the imbrication cuts across obvious primary segmentation resulting from gaps (rests) in the melody. In addition to maintaining methodological consistency, the trichordal imbrication reflects a development process at work beneath the 'surface' groupings that do so much to characterise Theme C, reflecting Schoenberg's (1995, pp. 170-71) assertion that: "The motive is *independent of the phrasing*." The original pitch interval and contour profiles may be deduced from Table 6.6 if necessary.

A. As in Theme B, 'a-type' forms dominate the development process, with the 'hub' a2 now heard at the very beginning of the new theme (Ex. 6.9). With the characteristic fifths of motive e also scattered throughout the theme it would appear that Themes B and C have much in common in terms of their shared lineage of motive-forms, a clear example of unity within diversity, the very essence of autogenetic development and Schoenberg's concept of developing variation.

Table 6.6 - Theme C motive-forms and transformations

Segment	I-CCP	Motive-form	Derivation	Transformation Category
1	–4–2	a2		A
2	–2–1	a1		A
4	–2–6		(a2)	C
6	–2–2		(a1)	D
7	–2–5		(a2)	D
8	–5+2		(a2)	D
9	+2–3		(a1)	C/D
10	–3–6	a4		A
11	–6–5		(a3)	C
14	–5–5	e		A
15	–5+1		(a3)	D–
16	+1–2		(a1)	A
18	–4+1		(a2)	D–
19	+1–3		(a1)	C/D
20	–3–5		(a2)	D
21	–5–4		(e)	D–
22	–4+5		(e)	D–
23	–3–3		(a4)	C
29	–5+5		(e)	A
37	+1+5		(a3)	C/D–
45	–4–1		(a2)	D–
53	–1+1		(a1)	D–
59	+4–3		(a2)	D
60	–3–2		(a1)	D
72	+5–3		(a2)	D
75	–1+6	a3		A
76	+6–5		(a3)	C
83	–3+6		(a4)	A
92	+2–2		(a1)	D
111	+2–4		(a2)	A
115	–1–1		(a1)	C/D–

There is, of course, a danger in this process of reduction to sameness. It is important to emphasise that the analytical method effectively traces the autogenetic process in reverse, homing in on points of origin. The source of the very evident difference between the themes, on the other hand, lies in the product of autogenesis, the diversity of variants to which a common stock of motive-forms gives rise. To work backwards from diversity to singularity is, while necessary and informative, also to deny the importance of the 'surface' to the "idea" of the whole. The identity of Theme C does indeed lie in those "other features of the composition, from rhythm through harmonic and metrical function to the delimitation of motive", but to regard them as "the mere 'surface', more a matter of 'presentation' than of 'idea'" is to undermine their crucial role in establishing at least one aspect the 'difference' (that of thematic identity) essential to a symphonic dialectic.[37]

The new direction to be taken in the evolution of Theme C is heralded by the three brief piccolo phrases that immediately precede it (Ex. 6.10). Each isolated gesture presents a diatonic formation (sets 6-33, 5-24 and 5-23), the falling scalic patterns deliberately counter to the slow, quasi-chromatic ascent that marks the end of Theme B at this point (bb. 24^5-26). Similarly, as Theme C unfolds discrete diatonic formations are constantly iterated, foregrounding diatonicism in isolated packages that are in turn juxtaposed, ensuring that no single collection assumes control (Ex. 6.11). Two examples will serve to illustrate the role played by both rhythm and contour in this demarcation. In b. 26 a falling six-note pattern (4-21) is immediately followed by a corresponding rising five-note form (5-24). Each outlines an overtly diatonic set, but their juxtaposition produces a distinctly chromatic collection (9-1). A similar juxtaposition is found in b. 29 (3-9 and 5-24). Elsewhere contour plays a less significant role, the juxtaposition highlighted more in terms of metrical emphasis (see, for example, bb. 25A-26, 27-27A,

[37] There is perhaps a parallel to be drawn here with concept of a Schenkerian 'background'. In terms of analytical insight, the background is of little interest. It is in the composing out of the background in

and 28-28A). Significantly, the most extensive diatonic formation occurs towards the conclusion of the melody, the collection 7-35 formed from two diatonic-cycle subsets 4-23 and 3-9 (b. 29A). As if to draw attention to the motivic origins outlined above, the sustained C#^{6} heads an unequivocal reference to motive a, clearly mirroring its initial statement at the very beginning of the work [C#, B, C#, A].

Both Themes B and C may be seen to emerge from a common 'germ' motive, but it is the through subsequent course of that (syntagmatic) evolution, that diversity and identity are established. It is in these more generalised characteristics (as in the diatonic crystallisation of Theme C) that the difference essential to a dialectical view of symphonic form is manifest.

Conclusions

Reflecting upon the concept of 'unity' in music and the aims of analyses that seek to demonstrate such properties, Fred Everett Maus (1999, p. 175) stresses what he acknowledges to be an obvious point, "that discourse about unity should somehow characterise musical experience". Put another way, a 'neutral level' analysis, such as that presented here, must be a means to an end, providing (ideally) concrete validation of an intuitive (esthesic) response to the music in question.[38] Ultimately such judgements can only be made in the light of an individual experience of the work as a whole. However, just as Schuman was seen to signpost important features of structural significance in the Third Symphony, using a vocabulary of gestures and devices familiar to listeners at ease with the symphonic legacy of the past, so too here the process of

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middle- and foreground features that the interest, indeed the identity of the work, lies.

development and the significance of opposition and contrast are foregrounded from the beginning. In its gradual, sinuous unfolding Theme B is heard literally to emerge from, or to develop out of, Theme A, with the development process driving the musical narrative forward. The perception of 'process' is a product of several factors, not least the progressively rising contour across the theme as a whole. But there is also a sense of development, the manipulation of interval and contour in a manner suggestive of "growth". The imposition of Theme C, meanwhile, introduces, in the clearest possible terms, the 'idea' of contrast (timbral, rhythmic, diastematic, gestural).

In the light of this diversity, the overtly segmented presentation of Theme A at the outset suggests, to draw on Schuman's (poietic) literary analogy, a list of characters to be fleshed out as the narrative unfolds. The alternation of brass and woodwind serves to emphasise the clearly differentiated intervallic content of each segment, contrasting the major second/major third of motive a with the overtly triadic perfect fifth/minor third of motive b, the perfect fifth of motive b with tritone of motive c, and so on.[39] As the work unfolds, the contrast of both instrumental groupings and characteristic sonorities will become an important feature as specific oppositions come into focus. Thus the initial presentation of Theme A can be seen, with the benefit of hindsight, to contain not only the source of motivic unity, but also the unrealised potential of subsequent diversities.

As suggested at the beginning, the particular strand of unity and diversity described here is only one of many that pervade Schuman's Sixth Symphony. In focussing upon the motivic aspect, the analytical method draws attention to the shift in Schuman's approach to the symphony (towards a more dynamic, fluid concept of form), emphasising a distinctly Schoenbergian view of development and coherence. The

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[38] That the experience of the work that prompted this analysis was not entirely idiosyncratic was reassuringly confirmed by the Irving Kolodin's (1999) account of the work, encountered in the final stages of the preparation of this chapter.

following chapter, with its emphasis upon the harmonic duality that pervades the work, will redress the balance to some extent, revealing familiar "architectural" formal models.

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[39] Notice also the contrast between the linear presentation of motives b and d, and the harmonic presentation of motives a and c.

CHAPTER 7

TOWARDS A "DYNAMIC" CONCEPTION OF SYMPHONIC FORM:

HARMONY AS SYMPHONIC DUALITY

Of the various oppositions alluded to in the previous chapter perhaps the most significant, when viewed in the context of Schuman's evolving engagement with the genre of the symphony, is to be found in the vertical dimension. In the Sixth Symphony, Schuman extends Harris's concept of harmony as "architectural definition", establishing a specific harmonic duality in the form of the two 'triad plus added note' sonorities previously identified as 'x' and 'y' in the opening statement of Theme A (see Chapter 6, Ex. 6.3). The first ('x') forms the familiar 'major-minor chord' 4-17 [0,3,4,7] and the second ('y') the diatonic tetrachord 4-14 [0,2,3,7] (Ex. 7.1). As the work unfolds they will be seen to underpin extensive sections of the music in a manner comparable to the use of that other 'triad plus added note' sonority 4-22, in the Chorale movement of the Third Symphony.[1] The remaining vertical sonorities in the presentation of Theme A were seen to reflect this duality also, forming either the chromatic subset of 4-17 [0,1,4], or alternative diatonic formations [0,1,6] and [0,2,5,7] (Ex. 6.3). The duality thus appears to operate on two levels: a rather loosely defined contrast of chromatic and diatonic elements, perhaps reflecting Vincent Persichetti's assessment of "[t]he heroic dualism caused by the resistance of the diatonic to the chromatic in the Sixth symphony" (Schreiber and Persichetti, 1954, p. 85), and a focussing of that opposition in the form of specific harmonic formations, the 4-17 and 4-14 tetrachords.

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[1] See the account of setting C^{v} (bb. 91-105) in Chapter 5.

Furthermore, from the presentation of vertical sonorities in the opening *Grundgestalt*, a hierarchy of emphasis is clearly discernible. The 4-17 sonority (x) is projected unequivocally, forming the first and second chordal formations of the work, and occurring four times overall. It also forms a melodic segment within the theme itself [C#, Bb, F, D], while 4-14 is heard only once, forming the first vertical sonority of b. 3, and not at all in melodic terms (Ex. 6.3). The rhythmic placement of the vertical sonorities (in particular the reiteration of 4-17 on the first beat of bb. 1 and 2, and as the first sonority of the second harmonised phrase in b. 5), suggests not only that the clear presentation of these vertical sonorities is a high priority in Schuman's opening statement, but also that 4-17 is to be afforded a degree of priority. As will become clear, this view is validated across the work as a whole, not least in the closing bars, exemplifying, for Peter Dickinson (1985a, p. 458), "the major-minor chord [4-17] as [Schuman's] own type of tonic."

The purpose of this chapter, then, is to trace this opposition, in both its 'focussed' and 'general' forms, as it is projected within specific and representative sections of the work. The manner of this projection raises important questions relating to Schuman's evident concern to engage with a more dynamic concept of symphonic form, as seen in the development of contrasting thematic materials in the previous chapter. For example, do the opposing tetrachords simply form an "architectural" backdrop against which the thematic drama is played out, or can they be seen as part of a more inclusive duality, infusing the horizontal (thematic) dimension also, approaching Schoenberg's (1975, p. 116) ideal of "filling [...] all the directions in which music expands"? If such an integration of the horizontal and vertical dimensions can be shown to operate (along the lines anticipated in the Chorale movement of Symphony No. 3), is it possible to model this more pervasive duality in terms of specific pitch-class set genera?

The advantages experienced in modelling the set class vocabulary of the Third Symphony in terms of empirically derived (Parksian) genera prompts a similar approach here. The role played by the primary tetrachords as the foci of a broader chromatic and diatonic duality is strongly suggestive of a theoretical model presenting two opposing genera. Ideally such a model would formalise the 'difference' between sets intuitively associated with one or other of the primary tetrachords, whilst also admitting some degree of ambiguity in sets displaying a looser affiliation. The methodological pragmatism motivating this approach is not intended to render obsolete Forte's alternative model, however. As will become apparent, the Fortean perspective may prove to be particularly insightful with regard to the changing nature of Schuman's musical vocabulary, and the internal dynamics of the music. Before examining the proposed harmonic duality in detail, it will helpful to map out the musical terrain within which it is seen to operate.

Formal Design

A general topography of the work is presented in Fig. 7.1 (vol. II), charting the principal means of structural delineation: thematic and harmonic identity. Areas of unequivocal harmonic focus ("architectural definition") are frequent and extensive, as, for example, in the case of the extended *Leggeramente* section (bb. 169-273) where 4-14 sonorities (including occasional subsets and supersets) underpin the thematic materials throughout. The sonorities that so define particular sections of the work are denoted by their set names in Fig. 7.1. As noted previously, however, harmonic identity is only one of many strands of opposition and coherence that pervade the Sixth Symphony. In particular, thematic identity remains crucial to the definition of form, with many of the earlier formal archetypes (passacaglia, fugue) retained, apparently at odds with the new, dynamic approach to form described above. The passacaglia principle is extended with themes taking the form of canti firmi, providing a thread of continuity through often complex contrapuntal textures.[2] In this role Theme A is fragmented into its constituent motives (denoted Aa, Ab etc.),[3] or otherwise modified whilst retaining its identity ('A' in bb. 94, 140, 273 etc.). It is also more radically transformed into the 'fugue' subject (A^1) that opens the Moderato con moto in b. 50 (Ex. 7.2a). Theme B performs a similar underpinning role, often alongside Theme A (as in b. 80 where it forms a pizzicato bass line). From b. 299 a fourth theme (Theme D), acting almost as a surrogate Theme B in terms of its slow tempo and sinuous, chromatic character, underpins much of the final Presto. The close relationship between the two themes is clarified in the central *Adagio* where the characteristic motive e, isolated in the initial presentations of Theme B (see Chapter 6), is seen to mediate between Theme B and Theme D in bb. 434-36 (Ex. 7.2b).[4]

In addition to matters of thematic identity, broad formal divisions are seen to correspond to the changes of tempo at bb. 50, 169, 421, 495 and 688, suggestive of a traditional four movement scheme framed by a slow introduction and coda (Fig. 7.1). However, in his response to this suggestion (put by Clark 1982, pp. 233-34), Schuman seemed concerned to emphasise the unity of the whole:

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[2] Cf. Dickinson (1985a, p. 458) who finds motives used "serially" in the central *Adagio*.

[3] Particularly striking are the references to motive d assigned to the timpani at points of structural significance: the transition to the *Leggeramente* section (bb. 150-68), and the climactic timpani glissando (A-Eb, a reference to motive d at its original transposition) summoning the final *Larghissimo* (see Ex. 7.14).

[4] The concern for continuity and integration extends to the transpositional level at which themes are presented. Running through much of the second half of the work, for example, Theme D projects an essentially inert cycle of minor thirds (T0, T3, T6, T9) clearly mirroring the interlocking tritones [C, F#, A, Eb] heard at the juncture of motives c and d of the *Grundgestalt* Theme A. A similar mirroring is heard during the course of the introduction (bb. 1-49) as Theme A itself is heard at T0, 6, 8, 9. Viewed motivically these levels of transposition can be seen embedded in the theme itself (Ex. 6.3), notably motive c [0, 6, 8] set 3-8, and the tetrachord 4-12 [0, 6, 8, 9], comprising motive c and the first pitch-class of motive d [Ab, C, F#, A].

> Maybe, it never occurred to me while I was doing it. I guess that's for someone else to say, it certainly wasn't conscious on my part. I thought of it as two great big anchors at the beginning and end; but I didn't just think that when I was starting it, it just came as I was writing it.

A similar analogy was employed by the conductor Antal Dorati in a commentary written for the first performance, referring to the function of the opening and closing sections as like, "the two pillars of a bridge, to hold and support the span of the whole structure".[5]

Against this necessarily schematic account of the work's structure the 4-14/4-17 harmonic duality may now be examined in greater detail. In an attempt to provide a balanced account within reasonable bounds of concision, detailed discussion will focus upon three representative sections of the work. In the first instance, the duality projected in the opening statement (Ex. 6.3) will be shown to infuse the rest of the *Largo* introduction (Schuman's first "anchor"). The 'first movement' *Moderato con moto* will then be shown to project the 4-14/4-17 opposition across three clearly defined sections, effectively realising the juxtaposition of sonorities presented in Ex. 7.1. It is this section of the work that will provide the matrix of sets for the consideration of possible generic models. A more general survey will then be undertaken, illustrating a number of the harmonic juxtapositions and oppositions outlined in Fig. 7.1, before refocusing upon the closing bars of the work (the final "anchor"), thus reflecting the tripartite metaphors employed by both Schuman and Dorati. It is in these final bars that the "tonic" status of the major-minor chord (4-17) is unequivocally affirmed.

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[5] Cited in Kolodin 1999, p. 182.

The harmonic duality 4-14/4-17

Schuman's first "anchor"

The opening *Largo* section promotes the idea of opposition, in harmonic terms, no less clearly than did the thematic contrasts examined in the previous chapter. With the chromatic 4-17 already prioritised in the harmonisation of the opening statement of Theme A, the two subsequent statements, over which Theme B unfolds, emphasise 4-14 as an alternative norm. Each new statement (b. 9 and b. 17) serves to cast a different light on the prevailing 4-14 harmony, foregrounding, with a clarity by now familiar in Schuman's writing, particular characteristics of the materials to be exploited further as the work proceeds. As an aid to orientation during the ensuing discussion Table 7.1 displays the set complexes (all the sub- and supersets of 4-14 and 4-17 of cardinal 3 to cardinal 9) about the two principal tetrachords. Of particular interest is the distinction between those sets that are exclusive to one tetrachord only (the outer columns) and those that are held in common by both tetrachords (centre column).

Table 7.1 Set complexes: 4-14 and 4-17

Complex (4-14)	Complex (4-14 and 4-17)	Complex (4-17)
#3-2, 4, 9	#3-11	#3-3
#4-14		#4-17
#5-5, z17, z18, 20, 23, 27, 29	#5-11	#5-16, 21, 32
#6-5, 9, z11, 18, z24, z25, z26, z29, 32, 33, z37, z38, z40, z41, z43	#6-8, z10, 14, 16, z19, 31, z36, z46, z47	#6-z13, 15, 20, 27, z44, z49, z50
#7-5, 7, 9, 14, 19, 24, 34, 35, z36	#7-2, 3, 4, 6, 10, 11, z12, 13, z17, z18, 20, 21, 22, 23, 25, 26, 27, 29, 30, 32, z37, z38	#7-16, 31
#8-6, 9, 21	#8-1, 2, 3, 4, 5, 7, 8, 10, 11, 12, 13, 14, z15, 16, 17, 18, 19, 20, 22, 23, 24, 26, 27, z29	#8-28
#9-	#9-1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	#9-
Total complex 4-14 = 107		Total complex 4-17 = 84

The first restatement of Theme A (Ex. 7.3) presents a combination of 4-14 sonorities and the full range of 4-14 trichordal subsets (3-2, 4, 9 and 11). The priority of 4-14 is established from the beginning, forming the first four vertical sonorities, before subsets are introduced. The change of instrumentation at b. 13 (from horns and clarinets to trombones and cor anglais) marks the second half of the theme, motive c [D, D, F#, C], underpinned by a sequence of three triads and the diatonic-cycle trichord 3-9, before rhythmic displacement in the part writing introduces a series of contextually 'dissonant' (non 4-14) sonorities: 4-10, 3-3, 4-19, 4-16 and 3-7. This broadening out of the repertoire of vertical sonorities retains a clear distinction between what might be seen as an extended orbit of diatonic formations (with 4-14 at their centre) and overtly non-diatonic sonorities.[6] Thus patterns of localised voice leading see non-diatonic formations such as 4-19 'resolving' (F to Eb) in familiar ways to diatonic sets such as (in this case) 4-16 (b. 15), reaffirming the contextually defined priority of diatonic formations in general terms, and of 4-14 in particular.[7] This form of harmonic intensification prior to a structural juncture (in this case the new thematic cycle beginning in b. 17) is a familiar facet of Schuman's musical language.

It is perhaps also worth pausing to consider the interaction between the 'passacaglia' Theme A and the emerging Theme B at this point. Literal concordance between melody and harmony is comparatively rare, but significant points of 'fusion' do occur, as in the conjunction of Theme B's C#^{5} and the 3-4 [D#, E, G#] harmony in b.12, together forming a further 4-14 sonority. Similar conjunctions form additional 4-14 sonorities in b. 14 (3-9 [Bb, C, F] plus C#^{4}), and (in Ex. 7.4), b. 17 (3-11 [D, F, A] plus E^6). While these examples mark significant points in the melody (phrase ending, registral extremes) other concordances between melody and harmony are few and distributed somewhat randomly, confirming, for the most part, the independence of

[6] In the present context diatonicism is defined in terms of the traditional seven-note collection (7-35).

the development process examined in Chapter 6 and its "architectural" harmonic backdrop.

The third presentation of Theme A (from b. 17 in the strings) recalls another familiar Schuman device, highlighting the 'triad plus added-note' nature of 4-14 by the rhythmic displacement of the 'added-note' in the bass (Ex. 7.4). The exposure of the triad (3-11) subset in this way recalls the similar separation of melody (triad) and bass (added note) encountered in the presentation of the 4-22 sonority in Chorale of the earlier symphony.[8] In the present case the separation serves to highlight the sole trichord held in common by the principal representatives of the harmonic duality; a property to be further exploited as the work unfolds.[9] While 4-14 forms the harmonic focus in each setting, the wider diatonic orbit is also invoked, in particular the 'triad plus added note' chords (4-16, 4-20, 4-22 and 4-26). The place of these sets in any generic model will be considered below.

Having thus consolidated the diatonic representative of the focal tetrachordal pair, the remainder of the first "anchor" (to b. 49) is concerned with foregrounding the very idea of opposition (Ex. 7.5). The stark contrast afforded by the contrapuntal imposition of Theme C over the cyclic repetition of Themes A and B was noted in the

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[7] Recall, for example, Chapter 3 (Ex. 3.5).

[8] See n. 1.

[9] There are only two departures from the harmonisation employed in the previous setting: in bb. 20-21 the bass pitches combine with the triads in violin 2 and viola to form further alternative diatonic tetrachords 4-20 and 4-22. In both cases comparison with the previous setting of Theme A is instructive (Ex. 7.3). In b. 12 the G# of Theme A formed the fifth of a 4-14 sonority comprising a C# minor triad (the C# is provided by Theme B) and an 'added' D#. A corresponding setting of Theme A in b. 20 would yield a D# minor triad with the 'added' E#. However, the displacement of 'triad' and 'added note' means that the pitch D# is already prominent, forming the 'added' note against the previous C# minor triad at the beginning of b. 20. The preferment of an F# major chord avoids the immediate repetition of the D#. A B natural in the bass would still yield a 4-14 sonority [F#,A#,B,C#], but the sense of transposition (up a tone) between the two settings, maintained by the invariant 3-4 trichords [D#-E-G#] (b. 12) and [E#-F#-A#] (b. 20), would be lost. In b. 21 the repeated Es of Theme A again form the respective thirds of minor and major triads (compare b. 13). On this occasion the D natural - D# motion in the bass can be seen as an expansion of the parallel fourths of b. 13 (F#-B/F-Bb) to form parallel fourths [D#-G#-C#] and [D-G-C]. Schuman appears concerned to maintain these intervallic correspondences between the two settings. The resulting tetrachord 4-22, prime form [0247], is effectively a major version of the primary sonority 4-14, prime form [0237]. A 4-14 sonority could have been created by substituting F natural for the bass D natural. The resulting stepwise ascent in the bass (D#-F-G) would appear to be uncharacteristic compared with the bass motions of the preceding bars, however.

previous chapter; the passage culminates in a return to chordal textures that perform a 'cadential' function in bb.32-4. The process of diatonic crystallisation characteristic of Theme C is furthered here as a succession of diatonic sonorities (5-35, 4-22, 5-27, 4-20, 6-33) close out the section via a discrete reference to motive a [C, Bb, C] in the melodic line. In addition to their diatonic credentials (as subsets of the diatonic collection 7-35), the two sets given particular rhythmic emphasis (5-27 and 6-33) are also 4-14 supersets. The extent to which such sets might be ascribed particular significance within a generic model will be considered below.

This local sense of closure is immediately followed by the block-like juxtaposition of chordal passages (taking up the C-Bb-C reference to motive a), that throw the 4-14/4-17 harmonic duality into sharp relief. The first block, on horns and trombones (bb. 35-6), reasserts the 4-17 sonority before a contrasting passage in the strings sees 4-14 re-emerge from a succession of '4-17 type' chromatic chords (4-17, 3-3, 4-7, 4-17, 4-19), suggestive of a similar wider orbit of sonorities around the chromatic representative of the principal tetrachordal pair. The brass immediately respond, reasserting the primacy of 4-17 (b. 39). As the work progresses it will become clear that sectionalised block forms are employed to an even greater degree than in the Third Symphony, with, in what quickly became a hallmark of Schuman's mature style, discrete instrumental groups playing a crucial part in defining sectional structures and specific oppositions within those structures.[10] Oppositions (harmonic, thematic, textural) are projected in terms of stark 'black' and 'white' contrasts, with little sense of mediation in what might be seen as a turn towards an increasingly 'urban' modernity.[11]

The first "anchor" concludes via recollections of Theme B on solo violin and

[10] In this deployment of instrumental groups Irving Kolodin (1999, p. 184) sees the instruments "taking sides, pursuing lines of thought especially suitable to their character."
[11] It is perhaps this trend that prompts Dickinson (1985a, p. 458) to compare the "harder edge" found here with the orchestral works of Varèse. See also Rouse (1985, p. 8).

oboe (bb. 39-47) over a shifting alternation of opposing trichords (Ex. 7.5). The 4-17 subset 3-3 often appears to resolve, via stepwise voice leading to diatonic trichords, 3-4, 3-2, 3-11, with the 4-14 'orbit' extended to include 3-7 in b. 46. In this context the triad (3-11) is heard both as part of the diatonic orbit associated with 4-14 (as a subset of the diatonic 4-z29 in b. 45), and as a common subset of the two opposing tetrachords (see the juxtaposition in b. 47). The final cadential gesture (b. 48) sees the chromatic polychord 5-22 'resolve' to the diatonic 6-33. The 5-22 chord (the result of the common-tone association of a major triad [E, G#, B] and a minor triad [F, Ab, C]) is representative of the wider chromatic orbit about 4-17, it is not a superset of 4-17. The polychord 6-33 (a product of two major triads a tone apart [Eb, G, Bb] and [F, A, C]), on the other hand, forms a stronger, inclusional link with 4-14.[12] The onset of the fugue is announced by the trumpets, projecting the diatonic 'triad plus added note' formation (4-20).

The distribution of harmonic materials during the course of Schuman's first anchor establishes a clear demarcation between the sonorities identified in the opening *Grundgestalt*, with the 4-17 and 4-14 chords representing a specific, focussed manifestation of the broader chromatic/diatonic duality identified by Persichetti. The idea of opposition is communicated most directly through the juxtaposition of discrete blocks of material dominated by one or other of these sonorities. That they may also be represented by their respective sub- or supersets is apparent in the 4-14 dominated passages, and also in the association of 4-17 and its only non-triadic subset 3-3 [0,1,4]. From this perspective the idea that the principal tetrachords may be fulfilling a cynosural role in the context of a clearly defined generic duality is a promising one. There are, however, important obstacles to such a tidy interpretation. In the first

[12] This sonority (6-33) was first encountered as the cadential product of triads a tone apart in the Passacaglia of the Third Symphony (closing Variation 1, see Chapter 3, p. 87).

instance the duality clearly extends beyond the bounds of the tetrachordal set complexes shown in Table 7.1, most obviously in terms of the additional tetrachords deployed, but also in the extended diatonic/chromatic 'orbits' described above. The inadequacy is a reciprocal one; just as not all diatonic sets are 4-14 complex members, and not all chromatic (non-diatonic) sets are 4-17 complex members, so not all 4-14 complex members are necessarily diatonic and 4-17 complex members are not exclusively chromatic. Any proposed genus will need to address such ambiguities in some way. It is with a view to refining such a model that the *Moderato con moto* 'movement' will now be examined.

Moderato con moto

Following the quasi fugal presentation of Theme A^1, attention again shifts to the juxtaposition of 4-14 and 4-17 related sonorities. The return of Themes A and B in b. 80 sees the 4-14 sonority re-established, defining the harmonic norm. (Exs. 7.6a-c provide an outline of the prevailing harmonic context, while Ex. 7.6d provides a complete melodic segmentation of the passage.) A marked shift of harmonic emphasis is then signalled by the return of Theme C in b.123^2 (Ex. 7.7a). The contrast is sharply drawn: the *accelerando* to a faster tempo, the shift from the string dominated textures of bb. 80-123^1 to woodwind and brass, and the obvious contrast invested in Theme C itself. However, the harmonic re-orientation is not from the 4-14 realm to that of its 'opposite' 4-17, but to their only shared trichordal subset (3-11), with Theme C projected as a series of parallel, root position major triads. The sense of transition is intensified by the anticipatory snare drum roll heard throughout this passage. The anticipation is fulfilled in b.132 with the unequivocal statement of the 4-17 sonority in low woodwind, brass and strings (*sonoro molto*). The constituent parts of the sonority (triad, plus 'added note') are again foregrounded, with the major triad [F, A, C] given particular prominence in the timpani.[13] This tripartite structure encapsulates the play of harmonic forces at work throughout the symphony. In simple terms the triad dominated central section can be seen to mediate between the principal harmonic protagonists via a common subset. Perhaps more significant, however, is the association of the 'neutral' triad with Theme C, emphasising a sense of 'otherness' in theme and harmony alike (considered further below).

The projection of this clearly defined and manageably compact three part structure makes the movement an ideal subject upon which to base a generic model of pitch structure. An effective model must put the relationship between the principal tetrachords and those sonorities associated with them, either by inclusion or the more general diatonic/non-diatonic categorisation, on a more formal footing. Such a model will be required not only to embrace the 'orbit' of sets associated with each tetrachord, but also to characterise the nature of the relationships between them. Why, for example, are certain sets afforded a particular priority (saliency) at points of structural import? In other words, it is not enough simply to account for the sets encountered, the model should also reflect the characteristics of the music's set structure at some level (recalling Park's "Preference Rules" (1998a, p.211)). The following, more detailed examination of the movement is designed to isolate these "characteristic" sonorities, in addition to forming a taxonomy of sets for the movement in its entirety.

Structural delineation and prominent sonorities

Returning to the 4-14 oriented passage (bb. 80-123^1), a number of sets achieve particular prominence. In addition to its pre-eminence as a vertical sonority, 4-14 is projected as a melodic formation in what might be seen as a central interlude between

[13] While the 'rhetorical' timpani solo is often regarded as a hallmark of Schuman's style (see Rouse 1985), its role in the articulation of particular harmonic and motivic relationships has largely been overlooked.

the paired statements of Themes A and B (see Exs. 7.6b and 7.6d). In this passage (bb. 94-104) melodic allusions to Theme A motives (for example, motive a in b. 103) are interspersed with melodic fragments outlining a number of 4-14 complex members (for example, 5-29, 6-z19/7-z38, 6-z46); a clear example of the harmonic material "filling all the directions in which music expands" (Ex. 7.6d). The horizontal projection of vertical sonorities culminates in the arpeggiation of the 4-17 superset 5-21 forming a cadential gesture at the end of this interlude. It 'resolves' onto the 4-14 chord (lower strings and brass) that marks the onset of the next section (Ex. 7.6b-c). However, the superimposition of this cadential sonority and the subsequent 4-14 chord also forms the complementary vertical sonority 7-21, a superset of both 4-14 and 4-17 .

Prior to this the diatonic polychord and 4-14 superset 5-27 is heard as a cadential sonority in b. 93 (Ex. 7.6a). Perhaps most significant of all, however, is the cadential passage that brings this 4-14 dominated section to a close (Ex. 7.6c). From b. 119 the elaboration of Theme B (violins) and the chordal projection of Theme A (horns and trombones) converge in a process of diatonic crystallisation similar to that observed in the original presentation of Theme C (Ex. 6.11). A descending bass line outlines an additional horizontal 4-14, before the passage comes to rest on a sustained 4-14 sonority. The melodic line combines with this to form the familiar 'gapped' diatonic collection 8-22, a set-class also outlined by the syncopated melodic pattern that immediately precedes it. The projection of a such a collection, familiar from the earlier analysis of the Third Symphony, is unusual and distinctive in the Sixth Symphony, being reserved exclusively as a cadential gesture (more on this below). The set data for the passage as whole is collated in Figs. 7.2-7.4.

Fig. 7.2 Pitch-class set data: bb. 80-93

Melodic (Theme A)	#3: 2, 6	#4: 24
	#5: 9, z12, 20, 33	#6: z3, z25
Melodic (Theme B)	#5: 9, 23	#6: z29, 34
	#7: 35	#8: 27
Vertical	#3: 4, 7	#4: 4, 10, 11, 14, 16, 17, 19, 20, 22
	#5: 5, 11, z17, z18, 20, 21, 23, 27, 29, 32, z38	#6: 14, 16, z19, z25, z40

Fig. 7.3 Pitch-class set data: bb. 94-104

Melodic	#3: 2, 6, 7, 8	#4: 11, 14, 20, 28
	#5: 2, z12, 21, 29	#6: z3, z19, z46
	#7: z38	
Vertical	#3: 4, 11	#4: 14, 16, 17, 20, 22
	#5: z17, 20, 21	

Fig. 7.4 Pitch-class set data: bb. 105-23[1]

Melodic (Theme A)	#3: 6, 8, 11	#4: z15
Melodic (Theme B)	#5: 1, 9, 35	#4: 11, 16, 27
	#7: 35	#6: z3, 32, 33
	#9: 10	#8: 22
Vertical		#4: 14, 16, 19, 20, 22
	#5: 5, 11, 13, z17, z18, 20, 21, 23, 24, 27, 29, 30, 34, 35, z37, z38	#6: 32, 33
	#7: 21	
Collection:		#8: 22

Regarding any prospective generic model of pitch structure, the importance of the 4-14 tetrachord as a source of harmonic ("architectural") identity is clear, while in the central interlude it is also afforded a wider melodic profile. The melodic elaboration of Theme A shown in Ex. 7.6d (bb. 80-93) creates a range of sets, some diatonic (3-2, 6; 5-z12, 20; 6-z25), but a number that fall outside both the diatonic and 4-17 inclusional orbits (4-24, 5-9, 5-33, 6-z3). The rhythmically fragmented presentation of Theme B, meanwhile, breaks the theme into segments that largely fall within the diatonic collection.[14]

[14] The pitch structure of Theme B is reproduced verbatim (T11) with the sole exception of the cadential Es of b. 93. This final scalic ascent forms the non-diatonic set 8-27. The only other non-diatonic set is 6-z29, formed around motive e (bb. 87^4-90^2). The extent to which this fragmented presentation of Theme B is heard in melodic, as opposed to harmonic terms will of course vary from listener to listener.

The transitional presentation of Theme C reiterates the opening bars of the theme,[15] before returning (in b.128³) to the characteristic head motive (7-10) as the springboard for a series of ascending figures around the diatonic tetrachord 4-16 (Ex. 7.7a provides a harmonic snapshot, Ex. 7.7b the melodic line in full). An initial assessment of this small group of sets highlights the obstacle to viewing the 4-14/4-17 complex as a more focussed subset of a broader diatonic/chromatic duality. A number of sets fall within the 4-14/diatonic taxonomy (3-2, 3-4, 4-13, 4-16 and 5-20), but the melodic formation 6-z38 is problematic, being both a 4-14 superset and non-diatonic. Such sets are few, but they serve to highlight the possibility of conflicting allegiances between sets that are chromatic 4-14 complex members on the one hand, or diatonic 4-17 complex members in the other. The set data for this passage is shown as Fig. 7.5.

Fig. 7.5 Pitch-class set data: bb. 123-31

Melody	#3: 2, 4	#4: 13, 16
	#5: 20	#6: 8, 31, z38
	#7: 6, 10, z12, 32	
Vertical	#3: 11	

The final (4-17) section of the movement is the most diverse and complex. Ex. 7.8 presents a pitch reduction that eliminates melodic repetition. Clearly segregated instrumental strata juxtapose sustained chords (brass, low woodwind and strings) against fast melodic formations that take the Theme C head motive as a starting point for further development (violins, violas, upper woodwind).[16] The 4-17 sonority predominates not only in the sustained brass chords, but also as a thickening of the melodic line in upper strings and woodwind, refocusing the harmonically 'neutral' setting of the previous triadic section. However, within the sustained chordal blocks the 4-17 sonority does not hold sway exclusively. In particular, diatonic formations often

[15] Cf. bb. 123-128¹ and bb. 25-25A¹.

[16] Melodically, the upper pitches of the brass chords make allusive reference to Theme A motives.

intrude to form a quasi-cadential 'other' resolved in the context of the prevailing 4-17 harmonic norm. The timpani triad [F#, A, C#] heard in bb. 134, 136 and 137 mediates between one such cadential succession. In b. 134, for example, it forms part of a 4-17 sonority, but in b. 136 it is heard against a 4-14 chord [Fb, Ab, A, Cb] combining with it to form the diatonic hexachord 6-32. The 'resolution' is achieved via the subsequent (diatonic) brass chord 3-5 [A, Bb, Eb] combining with the same timpani triad to form the 4-17 superset 5-32. Similar 'cadential' juxtapositions characterise bb. 143-46. Note in particular the voice leading so redolent of functional tonality that sees the 4-17 chord of b. 146 transformed into a 4-14 sonority by the shift from E to D in the trombones, before 'resolving' onto the 4-17 sonority of b. 147. The sense of tension and resolution is once again reinforced in other domains, most notably the snare drum roll and *crescendo*. As in the case of the earlier 4-14 dominated section, however, the primary sonority (in this case 4-17) acts only as the privileged focus of a less focussed diatonic/chromatic duality: not all chords of 'resolution' are 4-17 complex sonorities. As during the course of the first "anchor" when the chromatic 4-19 'resolved' to a diatonic 4-16 in b. 15 (Ex. 7.3), so here 4-19 appears to substitute for the focal 4-17 in bb. 146 and 148. Another chromatic substitute heard previously is the polychordal 5-22 in b. 144. This sonority was heard to resolve to the diatonic 6-33 at the conclusion of Schuman's first "anchor" (b. 48), it now prefaces the equally diatonic 5-35, which in turn 'resolves' to 4-17.

The chromatic orientation of this section is consolidated in the melodic dimension. The blocks of melody in upper woodwinds and strings, heard to interject between the 4-17 orientated sonorities in the brass, take the head motive of Theme C as a point of departure (as previously noted). Contrary to the original character of Theme C, however, the sets outlined by these melodic interjections are distinctly chromatic (Ex. 7.8). More significantly, the pre-eminent vertical sonority (4-17) is also reflected in a number of melodic formations. The distinctive sextuplets in bb. 133, 135 and 138 form supersets of 4-17 (6-z49 in the first instance and 6-27 thereafter[17]), while the third such interjection forms the 4-17 complement 8-17 and includes an explicit horizontal form of the 4-17 sonority (b. 138). From b. 145 the upper woodwind/string strata allude obliquely to the Theme A motive d (3-8 [Eb, F, Cb]), and outlining the 8-22 subset 5-33 in bare octaves across bb. 147-48; a reference to the cadential collection heard to close the 4-14 dominated section some twenty-four bars earlier (bb. 121-22). The movement concludes with a cadential gesture (reinforced by snare drum rim shots) of adjacent 4-17 chords. The ensuing timpani transition to the *Leggeramente* completes the Ad motive of b. 145, forming the all-interval tetrachord 4-z15 [C, Cb, Eb, F]. The pitch-class set data for this section is shown as Fig. 7.6.

Fig. 7.6 Pitch-class set data: bb. 132-68

Melody	#3: 2, 3, 6, 7, 8, 11	#4: 7, 12, 13, z15, 17, 18
	#5: 33	#6: 27, z49
	#7: 2	#8: 12, 17, z29
	#9: 2, 11	
Vertical	#3: 3, 5, 11	#4: 3, 14, 17, 19, 20, 23
	#5: 20, 22, 32, 35	#6: 32
	#7: z37	

The pitch-class set taxonomy presented here (Figs. 7.2 - 7.6) will form the raw material for the ensuing generic analyses. Prior to that, however, a brief survey of the remainder of the work, with particular emphasis on the final "anchor" will serve to confirm the salience of particular sonorities in the wider context, and the "tonic" priority afforded the major/minor chord in particular.

[17] The initial 6-z49 may be the result of a misprint. The lower parts are identical in all three cases, with the apparent discrepancy formed by the B natural in flute 1 and violin 1 in b. 133. The vertical sonority that results from this change is the only non-4-17 vertical encountered at any point in these related passages. In its original form (b. 25) the first six pitches of Theme C outline the set 6-27.

General survey and final "anchor"

With the notable exception of the two passages of fast contrapuntal music, both elaborated over 'cantus firmus' repetitions of Theme D (bb.299-418 and 571-655), the harmonic materials of the entire work are defined in terms of the 4-14/4-17 duality (Fig. 7.1). The following survey will serve to illustrate the pervasive nature of the duality, drawing attention to particular features to be embraced by the subsequent generic model.

In common with the earlier *Leggeramente*, the fast music of the *Allegro risoluto* also projects a 4-14 harmonic focus (Ex. 7.9). In the first instance (Ex. 7.9a), this takes the form of reiterated 4-14 set complex sonorities (4-14, 5-23, 5-27, 5-29, 6-z25, 6-32) against a pedal B natural in the horns. This gives way (via the same 8-22 cadential figure heard to conclude the 4-14 section of the *Moderato* movement in Ex. 7.6c), to a series of discrete instrumental blocks (brass, strings, woodwind etc.) juxtaposing Theme C derived melodic fragments and projecting further 4-14 sonorities (Ex. 7.9b). The last such block (brass, bb. 546-55) sees the 4-14 subset 3-4 isolated in the timpani before going on to form the prevailing sonority of the subsequent section from b. 556 (Ex. 7.9c). Immediately prior to this the 4-14 superset 5-z17 (b. 548) stands out as the only five-note set in this passage. It is a 4-14 superset, but significantly it appears to provide a cadential impetus into the following chord by virtue of its non-diatonic status: the A^5 that is the additional pitch 'resolving' to Bb^5 in the following bar. In this sense the set operates on two levels, as a 4-14 superset concordant with the contextually defined sonus of the passage, and as a dissonance in the broader chromatic/diatonic definition of the term.

By contrast, in the slow sections it is largely the 4-17 sonority that prevails. The central *Adagio* is presaged by a restatement of Theme B at its original pitch (bb. 419-31), before Theme D takes over as the primary thematic material of the movement (see

Ex. 7.2b). The movement is approached via a poignant recollection of Theme B's opening phrase (last heard in bb. 7-8), on solo trumpet, but it is also marked by the cadential juxtaposition of 4-14 and 4-17 sonorities across the barline (Ex. 7.10a). The predominantly harmonic (as opposed to contrapuntal) orientation of the movement affords many opportunities for similar juxtapositions, but it is the 4-17 sonority that gains the ascendancy in these exchanges, notably in the recollection of Theme A in b. 472 (again on trumpet at its original pitch). In the isolated blocks of sound that follow, the unheralded use of untuned percussion (cymbal and bass drum) throws the prevailing 4-17 sonorities into ever sharper relief (Ex. 7.10b).

As the symphony reaches its climax the 4-14/4-17 duality is again to the fore. The *Presto* that precedes the final "anchor" projects a contrapuntal texture of increasing complexity, underpinned by the cantus firmus of Theme D. At its climax (b. 639) no less than thirteen parts (ten 'real' parts) are heard in clearly defined rhythmic and timbral strata that project often overtly diatonic scale patterns (Ex. 7.11). The superimposition of strata, however, produces a rapid circulation of the total chromatic. Only as the passage reaches its conclusion does the texture as a whole crystallise into stable diatonic collections. The final 'cadence' (bb. 644-45) sees the juxtaposition of the extended diatonic collection 9-9 and the 4-14 superset 6-z38.[18] Thereafter a final statement of Theme D is projected over a series of stark chords (brass and strings) underpinned by steely cymbal strokes. The chords project dense five- and six-note representatives of the harmonic duality, with particular prominence given to the opposing diatonic and chromatic polychords 6-33 and 6-z19 (Ex. 7.12).

The return of Theme A in b. 655 (Ex. 7.13) is marked by the arpeggiation of 4-17 sonorities, further reinforcing the ultimate "tonicization" of that chord; a process

[18] The 'problematic' nature of this non-diatonic 4-14 superset has been mentioned above. Within the texture of the present chord the diatonic 4-14 superset 5-20 is clearly defined (woodwind and brass). It is the A natural in violin 2 that forms the non-diatonic hexachord.

confirmed during the course of the final *Larghissimo* (Ex. 7.14). The fragmented projection of Theme A culminates in motive Ad (at its original pitch) on timpani, the falling tritone (A-Eb) executed via a dramatic glissando.[19] Against this the basses ground the closing bars of the work on low Es. The *Larghissimo* brings the thematic process full circle, presenting Theme B (strings) against a strongly rhythmicised setting of Theme A (brass) at the pitch of their first such superimposition in b. 9. The harmonic setting is also corresponds to the earlier passage, the brass strata forming successive 4-14 chords. A pitch reduction of this final anchor illustrates the cadential juxtapositions of 4-14 and 4-17 related sonorities that finally settle on the "tonic" 4-17 sonority [E, G, G#, B]. The juxtaposition of sonorities in the closing bars encapsulates the essence of the harmonic duality that has been the focus of this survey. The final 'cadence' sees the diatonic 4-14 superset 5-29 (a product of 4-23 in the strings [Cb, C#, F#, Ab], plus F in the flutes) yield to the tonicised 4-17 (bb. 700-01). There follows a passage of five bars in which the tonic 4-17 alternates with a more ambiguous sonority, the pentachord 5-11, a superset of both 4-14 and 4-17, an ambiguity which may be resolved to some extent by the ensuing discussion of potential genera models.

What emerges from this survey is a process of architectural definition in terms of characteristic sonorities that is heard not simply to underpin the thematic process, but to project a specific harmonic duality. That the tetrachords 4-17 and 4-14 are the principal representatives of a more generalised opposition between the chromatic and the diatonic is clearly demonstrated in the passages cited above. These passages were chosen to present representative snapshots of a process that pervades the work as a whole. The purpose of a theoretical model is to place these principal sonorities in relation to those sets that appear, on an intuitive level, to be associated to them. Such a

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[19] See note 13. Note that the motive Ad is completed by the final dyad of the work [G, E].

model may then help to clarify some of the many ambiguities and uncertainties outlined above.

A generic model of harmonic duality

The need to reduce the number of potential cynosures to manageable proportions prompts a reappraisal of Parks's preference rules,[20] at least at this initial stage in the procedure. The desire for the generic model to conform closely to the object in statistical terms (Rules 1 and 3) is not in dispute, but from a pragmatic standpoint, when faced with as many potential cynosures as there are sets in the database, it makes sense to assess the claims of sets exhibiting a high level of saliency in the first instance (invoking Rule 4). This is not to rule out the possibility that the set structure may be governed to some extent by a cynosure that does not manifest itself overtly as a feature of the musical surface, but it does ensure that the eventual model bears as close a relationship as possible to those sets seen to characterise the object of enquiry.

An additional factor to be considered in the present case is the need to reflect the harmonic duality articulated with such clarity in the examples considered above. The search, then, is not for the single genus that best embraces the matrix in statistical terms, but rather for two largely complementary genera that taxonomise the sense of difference most clearly represented by the tetrachords 4-14 and 4-17. An ideal model will define not only those factors that differentiate between 'opposing' sonorities, but it will also accommodate and clarify areas of ambiguity. One such area was reflected in the significant intersection of the complexes about 4-14 and 4-17, but another stemmed from the inexact accordance of the 4-14 complex with the broader classification 'diatonic' and the converse, though less extensive, misalignment of the 4-17 complex and the non-diatonic realm. Such a model would then be in a position to address the problems and ambiguities encountered in the survey of the music conducted above.

The initial prioritisation of Rule 4 in the search for potential cynosures sees the isolation of those sets deemed to play a particularly prominent role in the presentation and articulation of the harmonic duality. In addition, the need for the model to embrace and distinguish between those sets inhabiting the outer diatonic/non-diatonic orbit of the matrix prompts a search for cynosures that crystallise that distinction.[21] Table 7.2 taxonomises these sets in terms of the 4-14 (diatonic)/4-17 (non-diatonic) duality, locating their principal points of presentation in the music.

Table 7.2 Prominent representatives of the 4-14/4-17 duality[22]

Set	k+ 4-17	k+ 7-35	Saliency
4-17	✓	✗	pervasive, mel. bb. 655-58
3-3	✓	✗	vert. bb. 5, 6, 35-47, 140
5-21	✓	✗	cad. b. 104
6-27	✓	✗	mel. b. 135, 38
6-z49	✓	✗	mel. b. 133
7-21	✓	✗	cad. b. 105
8-17	✓	✗	mel. b. 138
Set	k+ 4-14	k+ 7-35	Saliency
4-14	✓	✓	pervasive
3-4	✓	✓	vert. b. 556-71[1]
5-27	✓	✓	cad. b. 33, b. 93
6-32	✓	✓	cad. b. 136
6-33	✓	✓	cad. b. 48, b. 34, vert. bb. 497-508
8-22	✓	✓	collection/mel. bb. 119-23[1]
9-9	✓	✓	collection bb. 643[3]-644

[20] Parks (1998a, p. 211), reproduced in Chapter 4 (p. 143).

[21] It is the refining of the search in accord with a particular experience of the music that draws the criticism of circularity (see Forte' s question to Parks in Ayrey 1998b, p. 233). The validity of the criticism depends to some degree on the extent to which the derived model reflects back on the object, an iterative process facilitating new and valuable insights into the musical processes and relationships. To this extent the matching of model and object is only a means to an end.

[22] The expression k+, it will be recalled, signifies an inclusion relationship between two sets actually manifest in the musical object. It is a refinement of Forte's (1973) k relationship.

These initial criteria effectively eliminate from consideration those sets that, while achieving a degree of prominence, fail to characterise both the broad and narrow orbits of the proposed duality; for example, non-diatonic 4-14 complex members (such as 6-z48), or 'chromatic' sets that fall outside the 4-17 complex orbit (the chromatic polychord 5-22). While it is desirable that these sets should be embraced by the generic model, they are unlikely to play a cynosural role by virtue of their evident misalignment with the prevailing trends of association. Their elimination leaves a total of fourteen potential cynosures, whose engagement with the set matrix for the *Moderato* movement is charted in Table 7.3 (vol. II).

The requirement that the model should distinguish between sets that are unequivocal representatives of the respective 4-14/diatonic or 4-17/non-diatonic orbits militates against a number of set complexes that that otherwise perform well in statistical terms (Table 7.4). In the case of the 4-14/diatonic orbit (Table 7.4) the extended collections 9-9 and 8-22 embrace the largest proportion of the matrix, but even cursory reference to Table 7.3 reveals their inability to distinguish between sets characteristic of the fundamental opposition (not least the tetrachords 4-14 and 4-17 themselves).

Table 7.4 Engagement of prominent (4-14/diatonic) sets with the matrix

Set	% of matrix	Set	k+ Squo	Set	% of potential
9-9	74.7	7-35	.084	9-9	74.4
8-22	73.5	8-22	.070	8-22	73.7
3-4	68.7	6-32	.069	7-35	70.0
4-14	49.4	6-33	.064	3-4	69.2
7-35	36.1	9-9	.058	6-32	57.5
6-33	33.7	5-27	.050	6-33	53.3
5-27	33.7	4-14	.046	4-14	49.5
6-32	22.9	3-4	.045	5-27	41.7

A similar problem afflicts the trichord 3-4, a prominent subset of 4-14 certainly, but also a component of sets that appear to have little in common with the 4-14/diatonic character (even at the tetrachordal level, for example: 4-4, 4-7, 4-19). Other measures also militate against these sets, most notably the Squo rankings which highlight the extent to which these large complexes are not engaged by the matrix of eighty-three sets. Only 8-22 offers a reasonably good fit in this regard (its lack of discrimination in terms of characteristic subsets notwithstanding); it is the smaller of the large complexes, but its claims are outweighed in statistical terms by the most obvious candidate, the diatonic collection 7-35. Although it engages only 36.1% of the matrix it does offer the highest degree of correspondence between model and object, as revealed by the Squo ranking. In addition it is not far behind the much larger complexes in terms of the percentage of generative potential realised in the matrix. For a small genus (forty-three sets) it performs well in a comparatively large matrix (achieving 70% of the maximum Squo 'ceiling' imposed by the matrix). The large complexes, on the other hand, achieve only slightly higher percentage of potential scores when measured against their own (lower) maximum Squos.[23] The statistical evidence enhances the intuitive claim of the complex about 7-35 to be representative of the wider orbit of 4-14 associated sets.

The search for a suitable cynosure on the 4-17/chromatic side of the divide is subject to the same criteria. As the complement of the primary tetrachord, the set 8-17 is likely to be located towards the centre of the proposed genus, and it performs well in statistical terms, achieving the highest Squo ranking and realising almost 70% of its generative potential (Table 7.5).[24] As a prospective cynosure, however, it fails to provide sufficient definition of the harmonic duality at lower cardinalities.

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[23] The statistical measures employed here were initially invoked in Chapter 4. For a detailed consideration of their significance, see Appendix A "Statistical checks and balances" (pp. 319-21).

[24] Coincidentally, the size of the complex about 8-17 (eighty-four sets) is very close to that of the matrix (eighty-three sets). The percentage of potential and Squo measures are almost synchronous, the genus (maximum set complex Squo .119) could almost achieve the maximum matrix Squo of .120. There is no sense of the percentage of potential measure attempting to compensate for the profligacy of an unduly large set complex. (See Appendix A "Statistical checks and balances" (pp. 319-21).)

Table 7.5 Engagement of prominent (4-17/chromatic) sets with the matrix

Set	% of matrix	Set	k+ Squo	Set	% of potential
8-17	67.5	8-17	.080	8-17	67.2
3-3	60.2	7-21	.079	7-21	65.8
7-21	50.6	6-27	.067	3-3	60.9
4-17	36.1	6-z49	.056	6-27	55.8
6-27	31.3	5-21	.047	6-z49	46.7
5-21	30.1	4-17	.043	5-21	39.2
6-z49	24.1	3-3	.039	4-17	36.1

In fact suitable candidates by this criterion are few and far between. The hexachords are reasonably discriminating, but their generative power is weak. The Squo ranking promotes their claims ahead of larger complexes, but they fail to engage with large numbers of sets in the matrix, particularly pentachords. Once again, they may be characteristic of the genus, but they do not form its cynosural focus. Claims for the pentachord (5-21), arpeggiated so prominently in Ex. 7.6b, are similarly undermined by its inability to engage not only with the many additional pentachords across the matrix, but also with nine of the hexachords not engaged by the diatonic collection.

Only one set performs well by all of these standards, the trichord 3-3. In its favour is its ability to embrace almost all those sets not encompassed by the 7-35 complex while at the same time intersecting with it only in the realms of cardinals eight and nine (for comparison the two complexes are juxtaposed in Table 7.3). It is thus highly differentiated from the opposing orbit of sets and, as the non-diatonic representative of only two trichordal subsets found in 4-17, highly characteristic of the work's so-called 'tonic' sonority. What cannot be ignored, however, is the poor performance of 3-3 against Preference Rule 3, as indicated by its low Squo ranking. Of the prominent sets considered it performs least well by this measure. The complex contains no fewer than 156 sets, and might be expected to realise more than 60.9% of its generative potential in the context of a comparatively small matrix.

Directly related to the problem of the 3-3 complex's profligacy is the lack of a finer degree of definition provided by either of the two complementary genera. Simple genera emanating from the cynosures 7-35 and 3-3 provide a clear cut distinction between those sets characterised as 'diatonic' and those deemed 'non-diatonic', but as yet there is no theoretical means of isolating the inner orbit of sets, those specifically associated with the primary tetrachords by inclusion. The very decisiveness of the distinction between the complexes about 3-3 and 7-35 is also a handicap to the effective modelling of those degrees of ambiguity noted above. An effective solution to these problems is provided by the creation of complex genera invoking both the specific (inner orbit) tetrachordal cynosures and the broader complementary complexes.

The advantages of such an approach are most clearly illustrated in relation to the complex Genus 3-3/4-17 shown in Table 7.6 (vol. II). (The Genus 4-14/7-35 (Table 7.10) is considered below.) The combination of the cynosural complexes adds only one further set to the original 3-3 complex, the 4-17 subset 3-11, but the benefit of the new model is found in the distinction that may now be drawn between those primary sets (common to both complexes) at the heart of the genus, and those secondary sets associated with the genus via only one of the cynosural pair. Table 7.6 illustrates an immediate benefit of the conflation as a large number of the 3-3 complex sets that previously diluted the intersection of model and object are relegated to secondary status. The shading that indicates the intersection of model and object highlights the tighter focus on the inner orbit of primary sets, with secondary sets engaged with decreasing frequency as cardinality increases. (A direct comparison of the status of sets within each genus is also provided in the two columns at the extreme right of Table 7.3). In terms of the inclusion relationship (as opposed to characteristic interval properties, of which more below) the significance of this trend lies in the fact that smaller secondary sets are more closely linked to their cynosural progenitors than their larger, more inclusive counterparts. Thus the intuitive association of additional 'chromatic' tetrachords (4-7, 4-19) with the prevailing 4-17 sonority observed, for example, in the instrumental 'blocks' of Ex. 7.5, is now achieved via their common subset (and joint cynosure), 3-3.

The juxtaposition of the two complex genera in the rightmost columns of Table 7.3 further highlights the distinctiveness of these genera at low cardinalities. Of equal interest, however, are the few sets claiming joint membership of both complex genera. The triad, for example, is confirmed as the only trichord common to both genera, but as a primary set of the genus 4-14/7-35 it is (predictably) associated more strongly with that genus. Perhaps more significant are similar allegiances among larger sets. Of the three pentachords afforded joint membership of both complex genera, two achieve prominence in the music. The chromatic 4-14 superset 5-z17 was shown to resolve to 4-14 in Ex. 7.9c. Its ambiguous status (commented upon above) is reflected in its status as a secondary set in both genera.[25] By contrast the set 5-11, heard most prominently in the closing bars of the work (Ex. 7.14), reveals a slightly less ambiguous profile as a primary member of the genus 3-3/4-17, but only secondary member of 4-14/7-35. Its role in the closing bars of the work is thus seen to consolidate, rather than undermine, the "tonic" sonority.[26] A final observation pertains to the status of the hexachords 6-z49 and 6-27 isolated in Ex. 7.8. Their role in the melodic manifestation of the 3-3/4-17 genus is confirmed here; they are the only primary hexachordal members of the genus owing no secondary allegiance to the opposing genus.[27]

Although the correspondence of model to object is markedly improved by the invocation of the complex genus, the small size of both cynosures still produces large

[25] The only other dual membership pentachord (5-z18) achieves no real prominence; it is heard as a fleeting vertical sonority only (see Figs. 7.2 and 7.4).
[26] One further dual membership set calling for comment is 6-z29, the melodic formation reiterated as the large motivic unit e in Theme B. It is an ambiguous secondary member of both genera, embracing both sides of the generic divide through its origins in the diatonic cycle of motive e (see Chapter 6), and the chromatic twist in its tail (see Ex. 6.5).
[27] This observation may be seen to cast doubt in turn on the equivocal status of the 6-z49 formation (see n.17 above).

numbers of high cardinality sets (twenty-five of the twenty-nine possible octads, and all of the nonads). The essence of the problem, and its partial solution can be illustrated in considering the set 8-22. This is a familiar sonority first encountered in the form of the 'gapped' diatonic collection characteristic of the Third Symphony. In the present context it is intuitively associated with the 4-14/diatonic orbit of sets, most clearly in the conclusion to the first principal section of the *Moderato* movement (Ex. 7.6c). The tendency of both complex genera towards profligacy in high cardinalities results in this set being afforded primary status in both cases (see Table 7.3). That it is more strongly associated with the Genus 4-14/7-35, however, is revealed by those patterns of interval distribution that determine those sets deemed "characteristic" of a genus (see Table 7.12 below).

Characteristic sets: Genus 4-14/7-35 and Genus 3-3/4-17

The range of qualities displayed by sets seen to characterise a particular genus was discussed in relation to Parks's original criteria in Chapter 4 (pp. 151-57). A particular issue raised there was the need to accommodate the characteristics of joint cynosures, each of which may project distinctive, even conflicting, intervallic signatures. The final choice of characteristic sets was seen to depend upon both the extent and nature of the intervallic relationships between sets at a theoretical level, and the necessity that the model should characterise both the surface sonorities and the internal dynamics of the musical object. A response to the charge of circularity in this approach is to be found in the potential for tension between sets deemed characteristic of a genus in purely theoretical terms, and those sets seen to characterise the genus as it is realised in the music.[28] Far from representing a failure in terms of the ability of genera theory to model 'real music', such tensions may be the source of valuable analytical insight. In the present case the two complex genera under consideration are markedly different, each posing different problems associated with the isolation of characteristic sets.

In the light of their close inclusional relationship it comes as little surprise to note that the characteristic sets generated independently by 3-3 and 4-17 are closely related (Table 7.7).

Table 7.7 Characteristic sets for complexes 3-3 and 4-17

Characteristic sets (complex 3-3)		
sc	iv	sia
9-3	767763	1-1-1-1-1-1-2-1-3
8-19	545752	1-1-2-1-1-2-1-3
7-21	424641	1-1-2-1-3-1-3
6-15	323421	1-1-2-1-3-4
5-21	202420	1-3-1-3-4
4-19	101310	1-3-4-4
3-3	**101100**	**1-3-8**

Characteristic sets (complex 4-17)		
sc	iv	sia
9-3	767763	1-1-1-1-1-1-2-1-3
8-17	546652	1-2-1-1-1-2-1-3
7-21	424641	1-1-2-1-3-1-3
6-20	303630	1-3-1-3-1-3
5-21	202420	1-3-1-3-4
4-17	**102210**	**3-1-3-5**
3-3	101100	1-3-8

However, the present example differs significantly from the complex Genus 8-22/8-23 considered in Chapter 4. There an important aid in the isolation of characteristic sets was the generative diatonic-cycle; not only did the cycle (in both its normal and 'gapped' forms) provide a historical and theoretical basis for the choice of sets, but it was also a consistent feature of the musical object in question. In the absence of such a key, the task of isolating sets characteristic of the complex genus 3-3/4-17 must be approached by a more empirical route. The methodology will restrict the search to those sets exhibiting both a high level of intersection with the cynosure, and similar patterns of interval distribution. Thus the emphasis on interval classes (ics) 1, 3 and 4 in the vectors of 3-3 and 4-17 should be further reflected in the vectors of further sets deemed

[28] On circularity, see above (n. 21).

characteristic of each cynosure (Table 7.7).[29] Such a distribution is a particular feature of the pentachord 5-21, for example, a set that is also strongly associated with both cynosures via its complement 7-21. No other seven-note set embraces 3-3 and 4-17 to an equivalent extent.[30]

The mutually enhancing attributes of intervallic definition and high inclusivity are features of complementary sets that are denied characteristic hexachords. In the case of 3-3, the interval vector of the chosen set 6-15 again reflects the characteristic emphasis upon ics 1, 3 and 4, but it is only one of several hexachords intersecting with 3-3 four times.[31] Its marginally more characteristic interval vector is reflected, however, in the TC operation combining the cynosure with itself: 3-3*3-3 = 6-15.[32] On the 4-17 side of the genus the highly distinctive hexachord 6-20 forms strong inclusional relationships with the cynosure and all the other characteristic sets.[33] There can be little doubt as to its characteristic status at a theoretical level, reflecting both the emphasis upon ics 1, 3 and 4, and the successive interval array (sia) sequence 1-3-1-3 characteristic of the 5-21/7-21 complement pair. As will become apparent, however, this hexachord is less easily reconciled with the musical object of which it is supposedly a model.

The hexachordal examples illustrate a further feature of characteristic sets, notably that two or more different sets may mediate between sets of immediately higher and lower cardinalities with equal effectiveness in terms of the distribution of intervals across both interval vectors and sias. The interval vectors of the two hexachords

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[29] The emphasis placed upon these interval classes thus homes in on the difference between the primary tetrachords 4-14 and 4-17, downplaying the role of ic-5 common to both as a feature of their shared triadic subset (3-11).

[30] The cynosure 3-3 intersects with 7-21 seven times, intersecting with no other seven-note set more than five times. Similarly, 4-17 (three times, no other more than twice).

[31] They are: 6-z10, 6-14, 6-15, 6-z19 and 6-z44.

[32] The deployment of Cohn's (1988) operation of transpositional combination (TC) to demonstrate shared isomorphic properties between characteristic sets was invoked in Chapter 4. See Appendix A "'Characteristic sets': further theoretical issues" (pp. 330-33).

illustrate the point (Table 7.8). At ic 2 6-15 mediates most effectively in the direction of 7-21, whereas at ic 4 it is more readily associated with 5-21. The situation is reversed with respect to 6-20. A concomitant inclination towards either pentachordal or septachordal neighbour is evident in their respective sias, but on balance the two hexachords fulfil the criteria for characteristic status with equal effectiveness.

Table 7.8 Comparison of interval vectors: Genus 3-3/4-17

Set	v	e	c	t	o	r
7-21	4	2	4	6	4	1
6-15	3	2	3	4	2	1
5-21	2	0	2	4	2	0

Set	v	e	c	t	o	r
7-21	4	2	4	6	4	1
6-20	3	0	3	6	3	0
5-21	2	0	2	4	2	0

A similar relationship pertains between the cardinal 4/8 complement pairs and the sets of cardinal 3/9 and 5/7 on either side of them. The cynosure 4-17 leans more towards 3-3 at ic 4, whereas the characteristic set 4-19 is inclined towards 5-21 at ic 4. That the 4-19/8-19 pair is deemed more characteristic of the 3-3 cynosure than the cynosural pair 4-17/8-17 is due in large part to the high level of inclusion enjoyed by 3-3 in the octad 8-19.[34]

The characteristic sets isolated in relation to each of the twin cynosures 3-3 and 4-17 represent coherent and theoretically sound groupings both in terms of their intervallic properties and their mutual inclusivity. But to what extent can they be deemed characteristic of the music under examination?

The role of 4-17 as the principal focus of the non-diatonic orbit of sets projected in the music prompts the elimination of the 4-19/8-19 pair from the final list of characteristic sets. The close relationship between the 3-3 cynosure and 4-19 does much to account for the tetrachord's prominence as a 4-17 substitute, most notably in the

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[33] The complex about 6-20 is extremely small (19 sets), with 5-21/7-21 the only penta-/septachordal sub-supersets. The remainder of the complex comprises: #3/9: 3, 4, 11, 12; #4/8: 7, 17, 19, 20.

context of the first "anchor" (Exs. 7.3 and 7.5). The cynosure 3-3, meanwhile, is heard most prominently in other sections of the work, not least in the concluding bars of the first "anchor" (Ex. 7.5). Within the *Moderato* movement, the characteristic complement pairing 5-21/7-21 formed the prominent cadential gesture shown as Ex. 7.6b.

The only sense of slippage between theoretical and empirical models lies in the choice of characteristic hexachord, and the lack of prominence afforded sets of cardinals eight and nine. The set 6-20 was shown to characterise the 4-17 orbit of sets with particular rigour, but it is a set that is conspicuous by its absence in the music at any point, a fate also shared by the 3-3 characteristic hexachord 6-15 (see Table 7.6, vol. II). A far more promising candidate may be proposed in the form of the hexachord 6-z19, heard most prominently towards the conclusion of the work, underpinning the final statement of Theme D (Ex. 7.12).[35] It is only marginally less characteristic in theoretical terms, and it fulfils the criteria for inclusivity and interval distribution most satisfactorily. A possible explanation for this misalignment of theory and practice may lie in the polychordal disposition of many vertical sonorities in the work. For example, the hexachord 6-33, heard to characterise a number of diatonic junctures in the music, is usually heard as a polychord, superimposing two major triads a tone apart. The hexachord 6-z19 may be seen as its logical 'opposite', taking the form of two minor triads a semitone apart. Of the 'theoretical' alternatives, 6-15 cannot be presented as a polychord, and although 6-20 may take the form of a major triad and a minor triad (for example: A, C, E, / C#, E#, G#), it (arguably) forms a less balanced counterpart to its 'major/major' opposite number 6-33.[36]

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[34] 3-3 intersects with 8-19 nine times, with no other octad more than six times, and with 8-17 only four times.
[35] See bb. 649-50, 651 and 654.
[36] In addition to its characteristic status here, 6-z19 will be encountered again as a principal set in the final work to be examined, the Ninth Symphony.

In common with its lack of engagement at cardinal eight and nine in numerical terms, it is also difficult to see the sets 8-17 and 9-3 as entirely characteristic of the musical object. The cynosural complement 8-17 is seen to form the third melodic unit outlined in Ex. 7.8, but it is one of several large sets formed by the distinctive block-like juxtapositions encountered during this passage. It retains its characteristic status primarily by virtue of its position as cynosural complement. At cardinal nine the characteristic status of the cynosural complement 9-3 receives no clear projection in the music. Its elimination from the final list of characteristic sets serves to highlight the weighting towards lower cardinalities that is itself a characteristic of the music. With these modifications, the characteristic sets for the complex genus 3-3/4-17 are displayed in Table 7.9.

Table 7.9 Characteristic sets for Genus 3-3/4-17

sc	iv	sia
8-17	546652	1-2-1-1-1-2-1-3
7-21	424641	1-1-2-1-3-1-3
6-z19	313431	1-2-1-3-1-4
5-21	202420	1-3-1-3-4
4-17	**102210**	**3-1-3-5**
3-3	**101100**	**1-3-8**

The proposed complex genus 3-3/4-17 can thus be seen not only to provide an effective model of the 4-17/non-diatonic aspect of the harmonic duality in quantitative terms, but it also serves to highlight at a theoretical level the close association between a number of prominent sonorities in the music, and their place at, or towards, the centre of the genus.

Characteristic sets for the complex Genus 4-14/7-35 shown in Table 7.10 (vol. II) are determined by a similarly empirical process. Whereas in the previous case the selection of sets sharing characteristic properties with the cynosures 3-3 and 4-17 was guided to a great extent by the distinctive distribution of intervals within those cynosures (the emphasis on ics 1, 3 and 4), in contrast the isolation of characteristic sets in relation to the cynosure 4-14 relies on the comparatively even distribution of intervals within the cynosure (Table 7.11). Only the dual entry at ic-5 betrays a leaning to the diatonic, in other respects it is, paradoxically, an inherently uncharacteristic set.[37] The sets thus deemed characteristic of the 4-14 complex display a logical and incremental expansion of interval content, but they form a less cohesive grouping than those associated with the rival 3-3 and 4-17 complexes above. The sets associated in terms of their intervallic properties do not form a mutually inclusive group due to the lack of inclusion between the hexachordal and septachordal members.

Table 7.11 Characteristic sets for complexes 4-14 and 7-35

Characteristic sets (complex 4-14)		
sc	iv	sia
9-4	766773	1-1-1-1-1-2-1-1-3
8-14	555562	1-1-2-1-1-1-2-3
7-27	344451	1-1-2-1-2-2-3
6-z46	233331	1-1-2-2-3-3
5-27	122230	1-2-2-3-4
4-14	**111120**	**2-1-4-5**
3-4	100110	1-4-7

Characteristic sets (complex 7-35)		
sc	iv	sia
9-9	676683	1-1-1-2-1-1-1-2-2
8-23	465472	1-1-1-2-2-1-2-2
7-35	**254361**	**1-2-2-1-2-2-2**
6-32	143250	2-2-1-2-2-3
5-35	032140	2-2-3-2-3
4-23	021030	2-3-2-5
3-9	010020	2-5-5

The choice of characteristic diatonic sets would initially appear to be unproblematic, with sets allied to the 7-35 cynosure via the diatonic cycle. Such a theoretically pure view of the diatonic orbit of sets in the present context is quickly refuted, however, by those sonorities seen to characterise the process of diatonic 'crystallisation' delineating important structural junctures in the music. At such junctures, a marked tendency towards sonorities associated with the 'gapped' diatonic cycle is observed, notably in the collection 8-22 (Ex. 7.6c) and the cadential polychord 6-33 (Ex. 7.5). The theoretical explanation for such an inclination towards the 'gapped'

[37] It is this even distribution of intervals that does much to account for the profligacy of 4-14 as a cynosure, a tendency most clearly reflected in the large complexes about the all-interval tetrachords 4-z15 and 4-z29.

diatonic cycle is to be found in the marginally closer association between sets characteristic of the 4-14 complex and those of the 'gapped' diatonic cycle, a relationship most clearly illustrated by a comparison of their respective interval vectors. Table 7.12 highlights the greater similarity between the vectors of 4-14 characteristic sets of cardinals 4, and 5 (and their complements) and those of the corresponding 'gapped' diatonic-cycle sets. The association is reflected in Forte's original measures of similarity.[38]

Table 7.12 Comparison of interval vectors: Genus 4-14/7-35

Set	v	e	c	t	o	r	Similarity	Set	v	e	c	t	o	r	Similarity
3-7	0	1	1	0	$\boxed{1}$	0	Rp	5-23	$\boxed{1}$	3	2	1	$\boxed{3}$	0	R_2, Rp
3-4	1	0	$\boxed{0}$	1	$\boxed{1}$	0		5-27	$\boxed{1}$	2	2	2	$\boxed{3}$	0	
3-9	0	1	$\boxed{0}$	0	2	0	Rp	5-35	0	3	2	1	4	0	Rp
4-22	0	2	1	$\boxed{1}$	$\boxed{2}$	0	R_2, Rp	6-33	1	4	3	2	4	$\boxed{1}$	Rp
4-14	1	1	1	$\boxed{1}$	$\boxed{2}$	0		6-z46	2	3	3	3	3	$\boxed{1}$	
4-23	0	2	1	0	3	0	Rp	6-32	1	4	3	2	5	0	Rp

The final choice of sets seen to characterise the complex genus 4-14/7-35 reflects both this inclination towards a more diffuse definition of diatonicism, and a focussing of the genus around primary sets. In other words, for a set to be deemed truly characteristic of the genus it must be a member of the inner orbits of sets representing both the 4-14 and the 7-35 side of the genus. By this criterion a number of sets previously deemed characteristic of the 4-14 cynosure fall away by virtue of their non-diatonic status, leaving the following array of characteristic sets (Table 7.13).

[38] See Forte (1973, pp. 46-60). The expression R_2 indicates "maximum similarity with respect to interval class". Only R_1, indicating an additional interchange feature between the two remaining vector entries, signifies greater similarity. The expression Rp "maximum similarity with respect to pitch class", common to all entries in Table 7.12, is indicative of a commonly held subset (n−1).

Table 7.13 Characteristic sets for Genus 4-14/7-35

sc	iv	sia
9-9	676683	1-1-1-2-1-1-1-2-2
8-22	465562	1-1-1-2-1-2-2-2
7-35	**254361**	**1-2-2-1-2-2-2**
6-33	143241	2-1-2-2-2-3
5-27	122230	1-2-2-3-4
4-14	**111120**	**2-1-4-5**
3-4	100110	1-4-7

Once again the final group of sets represents a melding of theoretical definition and empirical observation. That the two orbits of sets associated with the dual cynosures overlap to a far lesser extent than the 3-3/4-17 complexes invoked above is apparent in the rather less coherent grouping of characteristic sets presented here. Most noticeable is the lack of complement relations between sets, a result of the two spheres of influence exerted by the cynosures. Perhaps unsurprisingly, the cynosural tetrachord exerts greatest influence over sets of low cardinality as they are projected in the music, while larger sets achieve prominence through the process of diatonic 'crystallisation', characteristic of the larger cynosure. For example, the trichord 3-4 is frequently invoked as a trichordal substitute for the 4-14 cynosure, notably in the *Allegro risoluto* (Ex. 7.9c), but also in the first "anchor" (Exs. 7.3 and 7.5). At cardinal five the music appears less discriminating, with the sets 5-23, 5-27 and 5-35 all featuring at important junctures in the music (Exs. 7.5, 7.6a and 7.9a). Ultimately, however, the close association with 4-14 and its projection as one of a number of similar polychordal formations (Exs. 7.5 and 7.6a), sees 5-27 chosen as characteristic of the genus in the present context. At higher cardinalities the prominence of the collection 8-22 has been noted, but the role of the cynosure 7-35 and the collection 9-9 is most vividly illustrated in the process of 'crystallisation' that marks the conclusion of the extended contrapuntal climax to the work (Ex. 7.11). The point of fracture between the two spheres of influence is most clearly represented in the lack of inclusion between 5-27 and 6-33.

A perspective from Forte

The gradual process of refinement involved in isolating effective Parksian models is inherently analytical, involving the careful comparison of properties displayed by both model and object. Such "bespoke" (Ayrey 1998a, p. 175) genera offer a flexibility that allows characteristic sets to be closely modelled, whilst also admitting, and contextualising, a wider orbit of more loosely affiliated sets. Such flexibility is characteristic of Schuman's "instinctive" approach to composition, and, it might be argued, should be reflected in theoretical models attempting to explicate that approach. Although such flexibility was found lacking in previous attempts to ascribe Fortean models to Schuman's music, a further, necessarily brief comparison may never the less prove informative.

Table 7.14 (vol. II) illustrates the engagement of the *Moderato* movement matrix with the twelve Fortean genera ('x' and 'o' entries), and the subsequent 'reduced' affiliation ('x' only). The association of particular sets with the primary tetrachords, effectively modelled above, is also reflected here, with 4-14 an exclusive (singleton) member of Genus 10 and 4-17 a singleton representative of Genus 9. The process of reduction largely eliminates the previously high ranking Genus 4, leaving three genera closely associated with the primary tetrachords at the head of the reduced Squo ranking. Although the distribution of sets across the matrix favours those genera associated with 4-14 (Genus 10 and the 'dia' Genus 11), the close proximity of the genera representing both primary tetrachords reflects the high level of overlap between sets associated with both sides of the duality. Thus the hexachords 6-8, 6-z40, 6-14, 6-16, 6-z19 and 6-z46 are potential members of either Genus 9 (4-17) or Genus 10 (4-14), depending upon the overall distribution of sets within a matrix. In general, such a reading accords with the dual membership enjoyed by these sets in respect of the Parksian genera described above, but in several cases distinctions deemed unequivocal by the previous, Parksian model, are now blurred.

Two examples are indicative of the different criteria determining genus membership from the Fortean perspective. The tetrachord 4-19 previously associated exclusively with 4-17 as a chromatic 'triad plus added-note' sonority is now associated with both sides of the duality by virtue of its triadic component. The triad forms one of two progenitors for both G9 (3-3 and 3-11) and G10 (3-4 and 3-11), thus highlighting common ground deliberately excluded from the Parksian model. The same criteria assign 5-21, deemed characteristic of (and exclusive to) the complex genus 3-3/4-17, to both G9 and G10 by virtue of trichordal subsets common to both genera (3-3, 3-4, 3-11 and 3-12 are in the relation Kh to 5-21). The generic affiliation of these sets is thus dependent upon the audit of set members within a given passage governing the reduction process. So it is that the distribution of sets across the matrix representing the initial 4-14 dominated section of the movement (bb. $80\text{-}123^1$) assigns both 4-19 and 5-21 to Genus 10 (Table 7.15, vol. II). In the later 4-17 dominated passage, however, 4-19 (and 5-21 were it present) is assigned to Genus 9 (Table 7.17, vol. II). While the concept of "multivalency" has been shown to be a useful one in certain contexts,[39] the idea that these sets shift their allegiance according to the prevailing sonoric ambience runs counter to the sense of continuous and ongoing 'opposition' reflected in the bar-by-bar interaction of sonorities described above. What is apparent from this alternative perspective, however, is the shift of emphasis across the three sections of the movement in terms of the repertoire of sets engaged, regardless of the prominence afforded to them.

Tables 7.15-7.17 trace this shift of generic emphasis, from the 4-14/'dia' genera (G10 and G11) seen to predominate in bb. $80\text{-}123^1$, to the 4-17/'atonal-tonal' (read 'non-diatonic') Genus 9 ascendant in bb. 132-68, via the transitional, Theme C derived passage that reflects not only a harmonic 'neutrality' (in the form of the triad), but a melodic 'otherness' that sees the majority of sets ascribed to Genus 1 (atonal). At first sight the generic profile of this transitional passage (Table 7.16, vol. II) appears anomalous at best, and it should indeed be viewed with a degree of circumspection due to the small size of the matrix (only thirteen sets). That said, seven of the sets in the matrix are not members of the principal genera (G9 and G10) under any circumstances, reflecting a dissociation from the generic centre(s) of the work in these melodic formations that accords with their Theme C derivation (see Ex. 7.7b).[40] In this respect the Fortean model appears to accord more faithfully with an intuitive sense of 'otherness' or 'neutrality' associated with this passage. At the same time, it draws attention to the wider (k+) inclusivity of the Parksian models, most notably Genus 3-3/4-17 with its 'top heavy' distribution of sets (cardinals 7, 8, and 9), most of which are unrealised in the music. Of the melodic formations under consideration here 6-z38 is clearly positioned on the outer rim of Genus 4-14/7-35 as a secondary set (a 'non-diatonic' superset of 4-14), but the Theme C based septachords (7-6, 7-10 and 7-z12) are all primary sets of Genus 3-3/4-17.

Of course, it is impossible to explore fully every aspect of the Fortean model, in what amounts to an extended footnote. What this brief consideration does highlight, however, is the extent of the apparent discrepancy between a highly restrictive theoretical model, and a musical object, that while communicating a specific harmonic duality with great clarity, also projects a wider network of subtle and nuanced relationships, exploring degrees of inclusivity and connectedness. In this limited sense the situation reflects Cook's (1999, p. 257) observation that,

[39] See Kennett (1995, pp. 132-34).

> there seems to be a general principle that the more 'scientific' an analytical approach is (in the sense of being open to empirical confirmation or refutation), the less well adapted it is for the complex, and often ill-defined circumstances under which we use analysis to interrogate music and our experience of it.

Cook's concern here, broadly speaking, is with the essentially metaphorical nature of music analysis and the dangers inherent in attributing aesthetic value on the basis of the degree to which the subject of an analysis is seen to 'measure up' to such metaphorical ideals. Such dangers are perhaps nowhere more apparent than in the field of genera theory, where it is all too easy to see 'compliance' as an ideal required of the object rather than the model. In the case of the Fortean model, what may be seen as over-rigorous criteria for genus membership in the present context produce a scattered generic reading that, while confirming the essence of the harmonic duality experienced in the music, affords an undue complexity to the interpretation of the resulting generic profiles.

By contrast, the more empirically derived Parksian models result from a process of distillation and refinement originating in the broadly defined symphonic duality observed by Persichetti. The concept of primary and characteristic members, enabled a finer focus to be obtained, distinguishing between those sonorities at the centre of the duality and those more remotely engaged. The wider ranging Parksian model is more accommodating in this respect, but it is, none the less, an approximate model. Although the work as a whole engages the proposed genera more fully than the restricted matrix employed by way of example, a significant proportion of each genus (notably secondary sets of high cardinality) remains unexploited in the music. It is here that the concept of the "characteristic set" is most valuable, centring the theoretical template over the object in question. The convergence of characteristic sets between model and object does much to compensate for the excess of inherently uncharacteristic sets (on account of

[40] Those sets are 3-2; 4-13, 16; 7-6, 10, z12 and 6-z38.

their 'distance' from the cynosures) unclaimed by the music, but the fact remains that neither of the genera theories explored here (Fortean and Parksian) forms a perfect model.

Summary and conclusions

Regardless of the comparative merits of the two readings presented here, there can be little doubt that the Sixth Symphony represents a decisive shift in Schuman's approach to the very concept of symphony, manifest in an increased concern for the integration of harmonic and thematic materials, and the interplay of opposing forces within the unified whole of a single movement. Viewed from this perspective the work is representative of a distinctly Schoenbergian aesthetic of unity within diversity, the "Idea" of a work implicit in an opening *Grundgestalt.* It is a stance clearly reflected in Schuman's comparison between the genres of the symphony and the novel, invoking "multiple characters, complexity of theme, subsidiary ideas, main ideas, developmental devices" that "all [come] out as a unified whole in some way". But how far is it possible to see the many diverse elements encountered in this and the previous chapter "all [coming] out as a unified whole in some way"?

Writing in 1939, Roy Harris (1939, p. 670) called for a greater autonomy in art music, warning that America "still apathetic about the arts, is in danger of endorsing only a slick commercial illustrative music in service to Broadway, Hollywood and the radio, but that this danger could checked by incorporating accomplished non-commercial composers into the educational system [...]." He went on to anticipate that,

> music, becoming increasingly concentrated in materials, intense in mood and clear in form and presentation, will divide more distinctly into two fields: (1) *incidental* music as a traditional background for the cinema, theater and so forth and (2) *independent* music conceived as a complete aural experience in itself, releasing new qualities and magnitudes of expression. That radio and records will, by developing aural concentration, stimulate the interest and understanding of *independent* music, which will gradually become an integral part of the culture of our people.

In a sense Schuman's Sixth may be seen to respond to the call for an autonomous art music, but by 1948 America (even the idealised America of Roy Harris) had undergone upheavals that did much to undermine the very concept of autonomy, be it socio/political or musical. The events of the Second World War left an indelible mark on America, engendering a new sense of global responsibility and an awareness of horrors beyond American shores. Far from retreating into greater musical autonomy, it must be argued, by way of conclusion, that Sixth Symphony is very much a product of the "Age of Anxiety".[41]

A potent source of the "urban modernity" sensed by Dickinson lies in the multiplicity and, more importantly, the disconnectedness of the multiple 'oppositions' played out through the work, of which the harmonic duality explored here is only one. As has been shown, the work gains much of its structural integrity from the reiteration of thematic materials, often in the form of stable, cyclically unfolding canti firmi underpinning more volatile materials. It is a contrast most clearly sensed in superimposition of Theme C materials over the more firmly grounded Themes A, B and D, but it is also sensed in the contrasts between homophonic and contrapuntal materials, between fast and slow musics. The generic models explored above do much to focus the harmonic strand of this multiplicity, emphasising the sense of autonomy in a contextually defined harmonic duality, but they also focus attention on those areas that

[41] Auden's poem, set in Schuman's home town New York, and published in 1947, a year before Schuman began work on the Sixth Symphony.

explore the outer reaches of that duality. A glimpse of this 'other', straining the confines of an idealised symphonic unity, is seen in the transitional, Theme C based, passage described above (Ex. 7.7).[42] Paradoxically, it was the more restrictive Fortean model (Table 7.16) that focussed attention upon the sense of dislocation experienced here.

It is perhaps worth recalling Virgil Thomson's (1948b, p. 159) consideration of Schuman as "a man of high, of spectacular expressive gifts who has been constricted by the elegant abstractions of the American concert style",[43] a view formed on the basis of the ballet *Undertow* (1945) that did so much to divest Schuman of the formal restraints imposed by an essentially neoclassical view of the symphony. In the Sixth Symphony, composed three years later, Schuman's instinctive approach to composition, most clearly manifest in the process of autogenesis, can be seen to serve increasingly expressive ends, posing (as suggested by Cook) greater challenges to analytical methodologies predicated on ideals of musical autonomy. It is no coincidence that this development should reach perhaps its furthest point in Schuman's only symphony to refer directly to extra-musical events, "Le Fosse Ardeatine" (1968). As will become clear in the following chapter, however, such developments do not preclude the deployment of genera theory, they simply confirm its function as a means to essentially hermeneutic ends.

[42] A sense of 'otherness' associated with Theme C has been alluded to on several occasions. It is an impression given particular credence in a typically unbounded performance directed by Leonard Bernstein (on NYP 9904). Compare this with the only alternative recording available, that conducted by Eugene Organdy (on AML 4992).
[43] Cited in full in Chapter 1, p. 21.

PART 4:

SYNTHESIS AND "INSTINCT" - SYMPHONY NO. 9 (1968)

CHAPTER 8

"LE FOSSE ARDEATINE": AUTOGENESIS AND FORMAL 'AUTONOMY'

Schuman's Ninth Symphony *"Le Fosse Ardeatine"* (1968) marks the culmination of a number of the trends and developments observed in earlier chapters. Most immediately apparent is a further expansion of the tonal palette, building, in part, on the dense, slow moving harmonies of the Seventh and Eighth Symphonies, and embracing the total chromatic as a matter of course. While a number of works preceding the Ninth Symphony appeared to some to rely unduly upon sonority for its own sake,[1] the Ninth is characterised by a more complete and systematic integration of harmonic and thematic materials. Links are forged through the verticalisation of melodic formations and an ongoing concern for chromatic completion, often the result of combined melodic and harmonic formations. In this respect it can be seen to build upon those tendencies first identified in the Chorale of the Third Symphony, and explored more fully through the harmonic duality at the heart of the Sixth Symphony. Allied to that concern to "fill all the directions in which the music expands" was a parallel concern for unity and cohesion, expressed through processes of thematic variation and transformation, and most clearly in the Sixth Symphony's adoption of a single movement form. Schuman returns to the single movement scheme in the Ninth Symphony, embracing a broad tripartite structure which he describes as follows:

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[1] Recall, for instance, the response of Wilfred Mellers (1987), cited in Chapter 1.

> [T]he work is in three parts, played without pause and developed as a continuum. The Anteludium begins quietly, with a single melodic line separated by two octaves, played by the muted violins and cellos. The first section of this melody, which is 11 bars in length, continues its development over a span of 33 bars. At the 12th bar, however, the same melody appears in the second violins and violas, one-half step higher in pitch, and at the 23rd bar the same melody begins again one-half step higher still in the strings and the pitch is raised one-half step in each of the succeeding entrances during the first section of the work. Gradually other elements are introduced through a variety of developmental techniques.
>
> The music of the Anteludium leads without pause, but with identifiable transition, to the Offertorium, which section forms the bulk of the work. The moods are varied and range from the playful to the dramatic. The music is fast with the exception of several short contrasting interludes which always return to the fast tempo. The climax of the Offertorium is reached with an even faster tempo and a sonorous climax for full orchestra, with three pairs of struck cymbals employed in rhythmic patterns.
>
> The music of the Postludium at first echoes, in slow tempo, some elements of the climax just heard. Finally the opening theme of the symphony is again stated, but in an even slower tempo than at first. The setting is different and the melody, although again played by the strings, is harmonized in the trombones and tuba. New figurations are introduced and reference is made to the music of the Offertorium. The symphony draws to a close with a long freely-composed quiet ending characterized by an emotional climate which sums up the work and eventually leads to a final concluding outburst.[2]

Familiar procedures and preoccupations can be identified in Schuman's account, not least the canonic presentation of the opening theme rising by semitones through the cycle of repetition, reminiscent of the opening to the Third Symphony. Most significant in the present context, however, is the emphasis given to development, notably with reference to the opening theme which "continues its development over a span of 33 bars" and the "[gradual introduction of] other elements [...] through a variety of development techniques". Schuman's "instinctive" approach to the development of musical material, in particular melody, will be seen to achieve its fullest expression in this intensely personal and emotional work.

It is perhaps no coincidence that Schuman returns to the single movement form

[2] Preface to the published score (Merion Music Inc.).

for the first (and last) time since the Sixth Symphony composed some twenty years earlier. Both are works conceived in the proximity of momentous historical events that may be seen to colour the mood and intensity of Schuman's writing. Indeed, it might be argued that the adoption of the single movement span in these circumstances is as much to do with intensity of expression as it is to do with formal cohesion. The Ninth Symphony was written as a direct response to the impact of the memorial to victims of Nazi atrocities in Rome, visited by Schuman in 1967 (see Chapter 1). For Schuman the experience was clearly a seminal one, and the emotional impact of the Ninth Symphony is commented upon by a number of commentators.[3] But it may also be seen to be coloured by contemporaneous events; with American commitments in Vietnam reaching a peak (536,000 troops) by the end of 1968 (Evans 1998, p. 522), confidence and surety were increasingly scarce commodities in American society. In the case of the earlier work, the mood of uncertainty and instability sensed in the aftermath of the Second World War was seen reflected in the apparent tension between cohesive form and divergent content. Such tensions are to some extent ameliorated by a greater emphasis on development in the Ninth Symphony; materials are in a constant state of flux and evolution, blurring distinctions between contrasting materials. But, as will become clear, there is still a sense in which the very human source of Schuman's inspiration (the extra-musical subtext) breaks through the developmental 'autonomy' that governs the musical discourse.

The following account of the work attempts to assimilate all of these stylistic developments in a final appraisal of Schuman's musical language, charting a course between general observations and a more specific analysis centring upon the internal 'dynamics' of the music. The role played by Schuman's instinctive sense of autogenetic development is highlighted in an initial account of the diversity of thematic materials

[3] See, for example, Rouse (1980, p. 23) and Dickinson (1985a, p. 458).

encountered as the work unfolds. As witnessed in the Sixth Symphony, the process of thematic diversification is frequently highlighted through the superimposition and stratification of contrasting thematic materials, both rhythmically and by instrumental choirs.[4] Further observations focus upon the concern for chromatic completion and the integration of thematic and harmonic materials. All of these elements contribute to a fundamental formal dynamic that may be seen to invest the music with much of its momentum and emotional power. In the most general terms this may be sensed in the contrast between the sombre, essentially slow-moving outer sections (the Anteludium and Postludium), and the faster, more celebratory music of the Offertorium. The contrast is not confined to this simple tripartite form, however, but it is played out within the central Offertorium against a formal framework of distinctive "pillar chords". It is this internal dynamic that forms the second, and primary focus of analytical enquiry, invoking genera theory to trace the gradual incursion of the tragic, postludial 'reality', into the lighter, faster music of the contrasting Offertorium.

Thematic identity: contrast and allusion

As in Schuman's earlier work, thematic identity plays a crucial role in the articulation of structure in the Ninth Symphony. In essence "it's all melody", but melody in a constant state of autogenetic evolution, causing John Clark (1982, p. 59) to comment, somewhat wistfully, that,

> The source of thematic material in the Ninth Symphony is usually much less clear than it is in the Sixth. In the Ninth, Schuman [...] subjects his materials to extensive developments that often radically alter their character. It is a kind of

[4] For Clark (1982, p. 137), "Schuman's Ninth Symphony is almost a study in stratification".

> perpetual variation that is not found in the other Schuman study symphonies [nos. 2, 6, 7 and 9].

The result of this "perpetual variation" is the almost Brucknerian variety of thematic materials illustrated in Ex. 8.1. As previously, a general topography of the work is presented (Fig. 8.1, vol. II), illustrating the distribution of thematic materials across the work, in addition to principal instrumental strata deployed, prevailing harmonic sonorities, articulative features and areas of pitch centricity.

Clark's difficulty in tracing the source of these diverse materials is understandable; in this respect the taxonomy presented in Ex. 8.1 is borne of pragmatism, grouping themes on the basis of their most immediate associations. As noted previously (Chapter 6), the process of autogenetic development may result in the evolution of apparently contrasting materials from common motivic origins. This mutability pervades the thematic materials of the Ninth Symphony to a greater extent than any previous work, forming a complex web of association between materials whose 'surface' manifestations may appear to be diverse. By the same token, thematic materials associated in terms of surface characteristics of rhythm, contour and instrumentation, may be, in turn, the product of more distantly related motive forms. This complexity, both elusive and allusive, is a hallmark of Schuman's highly personal and distinctive approach to 'autogenetic development'. The following account traces, at least in part, the range and diversity of this web of thematic allusion.

The opening theme of the work (Theme A) provides a clear example of the process of autogenesis, first examined in Chapter 6. The initial eleven bar statement is unusually reiterative, focussing attention upon a number of distinctive contours and intervals. Typically, for a melody of this type, however, the focus upon selected intervals and contours does not progress to the formation of larger motivic units reiterated elsewhere in the melody; over its entire thirty-three bar span the melody is in a constant state of evolution. No less than thirty-one different interval-class contour profiles (I-CCPs) are isolated in Table 8.1 (vol. II), from an imbrication of the melody generating eighty-seven trichordal segments. Further invocation of the Schoenbergian categories of transformation explored in Chapter 6 reveals the origins of the autogenetic development process in five discrete motives (Aa - Ae), each of which give rise to a number of motive-forms (the thirty-one I-CCPs), which in turn transmute into further local variants (Table 8.2 and Ex. 8.1).[5]

Table 8.2 - Theme A motive-forms and transformations

Segment	I-CCP	Motive-form	Derivation	Transformation Category
1	–4+2	Aa		A
2	+2+3		a	D–
3	+3–4		a	D
4	–4–2		a	A
6	–3+5		a	D
7	+5–2		a	D
8	–2+2	Ab		A
10	–5–2		a	D
12	+2+1		b	D–
13	+1–6	Ac		A
14	–6+6	Ad		A
16	–1+1		b	D–
18	–6+4		a	C
19	+4+3		a	D
20	+3–3		b	D
21	–3+2		a / b	D– / D
22	+2–6		a / c	C / D
27	+2+2		b / (a)	A / (C)
30	+3–6	Ae		A
33	–6–1		c	A
36	–2+1		b	D–
37	+1–4		a	D–
40	+3–1		a	D–
42	–6+5		c / d	C / D–
44	–6–3		c	A
51	+1+1		b	D–
52	+1+5		c	C
54	+1+4		a	D–
56	–6–2		a / c	C / D
60	–5–3		a	D
64	–3–1		a	D–

[5] In Chapter 6 the taxonomy was slightly different in that the motive-forms isolated in each case (Themes B and C) where shown to relate back to a still more 'primal' motive in the opening *Grundgestalt* (Theme A). In the present case, however, the trichords isolated in Table 8.2 from Theme A (the opening statement of the work) represent the motives (as opposed to motive-forms) from which further development ensues.

The temporal nature of the development process, reflected in the analytical methodology, locates the motivic 'seeds' of the melody towards its commencement. What is notable in the present case, however, is the carefully paced distribution of motives in the exposed opening section of the melody, and a gathering sense of 'growth' from one motive to another as the melody unfolds. Thus the first phrase of the theme (bb. 1-4^1) is entirely the autogenetic product of the opening motive Aa (Ex. 8.1). The pace of development picks up in the second phrase (bb. 4^3-8^2), with motive Ab (G^5 - F^6 - G^5) anticipated at the conclusion of the first phrase (G^5 - F^6 - D^5), and motive Ac (D^5 - Eb^6 - A^5), emerging from a further manifestation of motive Ab (D^5 - C^6 - D^5); motive Ad (Eb^6 - A^5 - Eb^6), moreover, is a direct (overlapping) outgrowth of motive Ac. Only motive Ae ($A\#^5$ - $C\#^6$ - G^5) is held back, located towards the beginning of the melody's continued development from b. 12. Thereafter the melody unfolds as a continuous, endlessly varied, but remarkably cohesive whole.

This autogenetic process is characteristic of the thematic materials presented in Ex. 8.1. All display similar qualities of restless expansion. Indeed it is this sense of "perpetual variation" that infuses the work with a relentless forward momentum. The gradual introduction of "other elements [...] through a variety of developmental techniques" is demonstrated with the entry of Theme B in b. 34. The superimposition of this highly contrasting material in a clearly differentiated instrumental stratum (woodwind) over the steadily rising, canonic presentation of Theme A (strings) is strongly reminiscent of the imposition of Theme C in the Sixth Symphony.[6] In the present case the new theme marks the onset of a remarkable accumulation of instrumental strata, with new elements entering with each successive cycle of the canon (see Fig. 8.1). From the single line (albeit doubled in octaves) illustrated in Ex. 8.1, the instrumental texture of Theme B increases in complexity in b. 45 with piccolo and

[6] See Chapter 6.

clarinets joining to form a dense hocket-like texture, filling the gaps (rests) that characterise the initial presentation of the theme. This intensification is accompanied by punctuating four-note chords on viola and piano. The following Theme A cycle (b. 56) sees the viola/piano stratum take up the 'hocket' role with material of a slightly different rhythmic character (identified as Theme B[1]), meshing with the (now unified) continuation of Theme B in the woodwind.

This gradual expansion of the material is also apparent in the manipulation of interval and contour, the motivic building blocks of the autogenetic process. Table 8.3 presents a similar taxonomy of trichordal I-CCPs for the opening bars of Theme B (bb. 34-38[1]), shown in Ex. 8.1.

Table 8.3 Theme B - I-CCPs and variants

I-CCP			**Segment**
–6+6	+6–6		1, 27 / 2
(–6+10)	(+6–10)		
–6–2	+6+2	–2–6	3, (11) / (14), 20, 28 / 26
	(+1+10)		
–2+1	+1–2		4 / (5)
(+10–1)	(–10+1)		
–2–1	+2+1		(6) / (15)
–1–4			7
(–4+8)			
–4–4			(8)
(+8–7)			
–4+5			(9)
(–7–6)			
+5–6			(10)
(+10–2)			
–2–2			(12)
–2+6	+2–6		13 / 21
+1–6	–6+1		16 / 22
(–6+9)			
–6–3			17
(+9–7)			
–3+5			(18)
(–7+6)			
+5+6			(19)
+1–1			23
–1+3			24
+3–2			25
+2+4			29
+4+3			30
+3+1			31

The reduction to I-CCPs and variants reveals close affiliations with the motives isolated in Theme A, but also the beginnings of the process described by Schuman as the "constant autogenetic development of materials which are constantly turning on themselves [...], and spreading out or contrasting" (cited in Chapter 6). Of the twenty I-CCPs isolated, all but two (nos. 7 and 8) could be related to Theme A motives by some form of transformation category. The wealth of possible associations is indicative of a common fund of motivic materials, but it also serves to obscure the course of the development process; within the myriad possibilities of motivic/thematic 'cross-fertilisation' a single preferred path is impossible to determine with any certainty.

A clearer picture emerges, however, if the autogenetic independence of each new stratum is acknowledged. From its mode of presentation (notably the domains of instrumentation and rhythm) it is clear that Theme B is not a continuation of Theme A, but the product of a new train of thought, charting an independent course and in turn generating new materials via its own internal logic. Viewed in these terms the origins of Theme B are found in the six 'B-type' motive-forms (Ba - Bf) isolated in Table 8.4.[7] These new motive-forms represent the first stage in the further development process. Here too new motive-forms are seen to grow out of earlier forms, often overlapping (Ex. 8.1).

[7] The recognition of the multiplicity of possible motivic associations brings with it an inevitable blurring of previously established terminological distinctions. That is to say that the distinction drawn here between the motives of Theme A (Aa - Ae) and the motive-forms isolated in subsequent thematic materials (Ba - Bf, Ca - Cf, etc.) is largely one of convenience, privileging the motivic material unveiled in the opening bars of the work. As thematic materials proliferate the precise status of new motives/motive-forms becomes increasingly difficult to determine.

Table 8.4 Theme B motive-forms and transformations

Segment	I-CCP	Motive-form	Derivation	Transformation Category
1	−6+6	Ba		A
3	−6−2	Bb		A
4	−2+1	Bc		A
6	−2−1		Bc	A
7	−1−4	Bd		A
8	−4−4	Be		A
9	−4+5		Be	D
10	+5−6		Ba	D−
12	−2−2		Bc	D
13	−2+6		Bb	A
16	+1−6		Bb	D−
17	−6−3		Bb	D
18	−3+5	Bf		A
19	+5+6		Ba	D−
23	+1−1		Bc	D−
24	−1+3		Bc / Bf	D/C / D−
25	+3−2		Bb / Bd / Bf	C / D / C
29	+2+4		Bd	D
30	+4+3		Be	D−
31	+3+1		Bc	D

From the listener's perspective, each distinct stratum of the musical texture is heard to pursue an independent lineage in this way, with affiliations between themes sensed on the basis of a kaleidoscope of reflecting motives, motive-forms and local variants. Such is the range and diversity of subsequent motive-forms and local variants within each theme that a logical chain of development from one theme to another must remain elusive. The analysis goes some way towards accounting for the means by which the diversity of thematic materials is generated, but the intuitive connections sensed between themes remain largely resistant to formal classification. Indeed it must be argued that it is precisely this fluidity of association that engages the listener, drawing them into an intriguing labyrinth of autogenesis.[8]

Further thematic associations are formed through other domains. For example, located in the same registral and instrumental stratum, Theme B^2 appears to pick up where the B left off, further developing similar rhythmic gestures and contours. In terms

[8] Comparisons with Schoenberg emerge again here. Where Schoenberg apparently sought to 'discipline' the intuitive extremes of his motivic approach to composition (perhaps most evident in *Ewartung*), adopting the "method of composing with twelve tones [that] grew out of necessity" (1975, p. 216), at this stage in his career Schuman appears to be heading in the opposite direction, allowing his compositional 'instinct' ever greater freedom.

of its temporal proximity, however, the relationship is more distant, with B^2 enjoying a largely independent role within the central Offertorium. Similarly the distinctive instrumentation (piccolo and xylophone), rhythm and contour of Theme B^3 (effectively an extension, and culmination of B^2) are as much a part of its identity as specific motivic associations. It is heard on only one further occasion, towards the conclusion of the work, acting almost as a 'motto' for this particular strand of development. By contrast, in the case of Theme B^4 (also an isolated statement), the violins assimilate 'B-type' rhythmic and intervallic gestures previously associated with the woodwind stratum.

Elsewhere more transparent thematic associations are formed (Ex. 8.1). Theme C, a product of six motive-forms (Ca - Cf), and first heard in the Anteludium (b. 67), is subsequently transformed (C^2), performing a familiar 'cantus firmus' role within the Offertorium, from b. 344; the transformation is anticipated in the reiterative 'play' with the motive-form Ca [C, Db, Eb] in the woodwind from b. 183. The sustained, *cantabile* character of Theme C^1 (first heard from b. 263, and again from b. 318), affords comparison with both Theme C and the further development of Theme A (from b.12 onwards). The affiliation with Theme C is perhaps strongest, however, at the climax of the new theme (bb. 281-84) where a gestural reference to a comparable climax in Theme C (b. 70) is heard. The autogenetic process also sees C^1 emerge from variously transformed 'C-type' motive-forms.[9] Further 'C-type' references may be traced to an important chorale-like theme (C^4) heard on three occasions in the latter stages of the work (bb. 463, 491 and 559).[10] It progressively unfolds a pitch-class specific category-C

[9] Category A forms are: +3–6 (Cc), –6–1 (Cb); Category C form: –1+3 (Ca); Category-D forms: +5+2 (Cc), –4–3 (Cd) and +5+5 (Ce).

[10] The chorale-like quality of this theme is noted by McKinley (1977, p. 187), an observation condoned by Schuman in McKinley's report of an interview with the composer (ibid., pp. 334-40). McKinley's style-analysis of the Ninth Symphony offers an additional perspective on a number of features and issues addressed in this Chapter (compare, for example, McKinley's tabular outline of the work on p. 190).

transformation of motive-form Ca (bb. 473-76),[11] followed by a pitch-specific reference to the motive-form Cc, previously heard in bb. 268-69 of Theme C^1 (E^4 - G^5 - Db^5). The original manifestation of this motive-form in Theme C was afforded particular prominence in bb. 67-8 and bb.70.[12] Such subtle and allusive cross-references are a pervasive feature of thematic materials in the Ninth Symphony.

By contrast, the thematic affiliation of the brief string passage C^3 (bb. 398-408) is less clear. Aspects of contour and rhythm resemble Theme D (considered below), but motive-forms and variants revealed by the established process of reduction point to affiliation with Theme C,[13] a possibility enhanced by the manner in which this passage leads directly into a further, unequivocal reference to Theme C (b. 409).

In addition to establishing allusive connections, thematic materials articulate contrast and difference. The contrast between the prevailing slow music of the Anteludium and the fast music of the Offertorium is manifest in Theme D, with which the central section of the work begins (Ex. 8.1). Difference is most apparent in terms of rhythm, tempo and texture. Rhythmically the new theme is characterised by constantly shifting metric accents and interspersed triplet figures, projecting a marked sense of release following the dense chordal climax of the previous section (see below). The sense of freedom is enhanced by the light instrumentation (strings and piano, *leggiero*), and the open sound projected by the rising arpeggiated melody. Motivically the new theme is reiterative, focussing attention on specific intervals and contours in a manner that bears comparison to Theme A. A distinctive identity is established at the outset through an emphasis upon rising sevenths and fifths [F#, E, B]. (Similar reiterative

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[11] Whereby [C, Db, Eb] becomes [C, Eb, Db].

[12] This is also a pitch-class specific Category-C transformation, the original Cc [D, G#, B] becomes [B, D, G#] in b.70.

[13] Of the I-CCPs revealed by imbrication, only 1 and 2 do not form Category-A forms previously associated with Theme C. Both are, however, more distant transformations of Theme C motive-forms: I-CCP 1(+1–4) is a Category D– transformation of motive-form Cf, and I-CCP 2 (–4–6) a Category D transformation of motive-form Cc.

sevenths provide the springboard for Theme D[1], further affiliated by similarities of rhythm, register, articulation and timbre). Six motive-forms unfold over the first eight bars of the Theme D (Da - Df), establishing a distinctive identity, with allusive reference to familiar 'A-type' motives emerging only in the later stages of development (De, <+6+1>, and Df, <–6+6>). The contrast between Theme A and Theme D sees each create a distinctive sonus, reflecting the broader contrast between the outer sections of the work (the Anteludium and Postludium) and the central Offertorium, to be explored in greater detail below.

Clearly, this account can provide no more than a sketch of the motivic origins of thematic materials, and associations between them. Of central importance, however, is the emphasis placed upon the often subtle and elusive connections between materials. Contrast is rarely stark and decisive, but is constantly softened by a complex web of motivic, timbral and registral allusion. It is perhaps in this that the Ninth Symphony differs most radically from the Sixth; gone are the often abrupt juxtapositions of the earlier work, to be replaced by an altogether more continuous formal process. This sense of dynamic interaction within continuity informs not only the play of thematic materials, but it is also a key feature of the harmonic domain. It is this harmonic play of forces, seen as a direct extension of the autogenetic process, that forms the focus of the following analysis.

Integration of melody and harmony

With the emphasis upon stratified textures and thematic development, the Ninth is perhaps the most persistently contrapuntal of Schuman's symphonies. As indicated above, however, vertical sonorities also play a crucial role in the delineation of the work's formal structure. This delineative function, and the origins of such sonorities in the melodic domain, is foregrounded as the Anteludium draws to a close. The contrapuntal (canonic) presentation of Theme A in the brass (from b. 78) gives way to increasingly dense chordal formations, with the thematic presentation of the theme shifting to the strings in a subtle, and typically allusive, melding of Themes A and C (Ex. 8.2). The process culminates in a dense cadential cluster, embracing all twelve pitch-classes, resolving to the open fifth (Db - Ab).[14] Dense, twelve-tone vertical formations recur at moments of climax and formal articulation throughout the work. They are identified in Fig. 8.1 by the term 'chrm', and further by their outermost pitch-classes (lowest first). The most significant occurrences are to be found at the climax to the work as a whole (the conclusion to the Offertorium), where a succession of twelve-tone chords ascends, stepwise through the ('motivic') interval of a tritone (bb. 521-27), and at the conclusion of the symphony (b. 267).

Aside from their obvious gestural impact, such sonorities are also, in an extreme sense, thematic. Having first introduced the twelve-tone sonority in b. 84, Schuman subjects the following repetitions of Theme A (bb. 85, 90, 93 and 98) to a process of distillation and verticalisation, bringing the twelve-tone nature of the theme into stark relief (Ex. 8.3). The first such presentation (A_{T8}, b. 85) sees the opening phrase compressed, eliminating note repetition, with each tone sustained to form (to borrow Gunther Schuller's term) a "'bell-tone' pyramid" of seven pitches, generating the set 7-16.[15] As in the original presentation of the theme, the second phrase emanates from pitches heard at the conclusion of the first phrase (re-ordered in this verticalised presentation), before going on to unfold the remaining pitch-classes of the chromatic collection. All such repetitions are eliminated from the next statement, however, in

[14] Both Clark (1982, pp. 96-114) and McKinley (1977, p. 158) comment upon the deployment of these twelve-tone sonorities.

which all twelve pitches of the theme are compressed into the space of three bars, forming a further 'bell-tone' twelve-note sonority (A_{T9}, b. 90), with patterns of rhythm and metre throwing emphasis upon the complementary hexachords 6-z3 and 6-z36. A similarly brisk accumulation of the chromatic is repeated in the next cycle (A_{T10}, b. 93). The final statement (A_{T11}, b. 98) sees components of the opening phrase further exposed, first in a 'bell-tone' verticalisation of the opening hexachord (6-z3), followed immediately by the completion of the phrase in the seven note sonority 7-16 (bb. 98-101). The pitches [C#, F#, G] (set 3-5), picked out in the timpani, form a retrospective association with a similar figuration underlying the initial presentation of Theme C in b. 67 (Fig. 8.1). A number of such timpani figurations recur throughout the work, forming important associative threads of continuity. The central Offertorium is characterised by the timpani motive [F, G , Ab] (set 3-2); only in the Postludium does the [C#, F#, G] pattern return as part of a concluding ostinato (Fig. 8.1). The Anteludium concludes with a further, partial verticalisation of the complete theme (bb. 102-06), with melodic emphasis given to the final four pitches [D, Ab, C, Eb]. The cumulative sonority, however, omits the pitch-class C#.

Schuman's evident awareness of chromatic completion as a formal device,[16] prompts speculation regarding this omission. He expands on the concept in conversation with Clark (1982, p. 239):

> [T]he most brilliant example of twelve note writing, that has nothing to do with twelve tone writing, is in the Fifth Symphony of Beethoven. The principle of not repeating a note in twelve tone writing until you've sounded the other eleven is basically that of conserving a tone to make it fresh. I think Beethoven gave the greatest example of that in the little passage in the second movement of the Fifth [mm. 10-14] which is repeated over and over. Then just before the end of the

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[15] Schuller (1989, p. 339) introduces the term in his discussion of arrangements for the early swing bands in the 1930s. Schuman, meanwhile, first began to explore this means of verticalising the horizontal on a methodical basis in the 1947 ballet score *Night Journey*.

[16] Recall, for example, the interaction of melody and timpani in the second variation of the opening Passacaglia of the Third Symphony (p. 91).

> movement he adds a little extension to it [mm. 223-227] That's genius, that's saving it. [...] I think a good composer saves by instinct.[17]

In the light of this, the subsequent prioritisation of the missing pitch-class might be anticipated, but no such event occurs here.[18] As will become clear, however, chromatic completion remains as a central organising force in the music of the Offertorium.

Harmonic identity and generic association

With the symbiotic relationship between melody and harmony in terms of the total chromatic firmly established, a more explicitly 'thematic' harmonic framework is heard to underpin the formal structure of the central Offertorium. Here too the formative influence of the Sixth Symphony is reflected, in the shape of two clearly differentiated tetrachords. The following analysis examines the relationship between these sonorities in the context of a broader duality, that between the slow, essentially tragic music of the Anteludium and Postludium (mostly clearly expressed in Theme A) and the more exuberant music of the Offertorium, characterised most immediately in Theme D.

Schuman describes the motivation behind the music of the Offertorium, "with its various moods of fast music, much of it far from sombre" as "stem[ming] from the fantasies I had of the variety, promise and aborted lives of the martyrs".[19] He goes on to deny any direct programmatic intention, but the immediate contrast engendered by the onset of Theme D is, none the less, dramatic, casting off the cumulative weight of the

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[17] Bar numbers added by Clark (ibid.).

[18] A more convincing case for this procedure is made by McKinley (1977, p. 338) with reference to the dense string cluster (omitting C#) in bb. 548-51. The missing pitch is provided by the timpani in b. 552. Even here, however, the relationship is 'theoretical', with the piano doubling the strings with forearm clusters under the instruction "all notes". Elsewhere (b. 449), the collection 10-6 is projected, but in this instance the significance of the chord (the tritone complement) is perhaps more motivic; the 'missing' pitches are afforded no subsequent priority.

[19] Preface to the published score.

preceding canonic statements of Theme A. As the 'lighter' music of the Offertorium unfolds, however, the sombre aspect of Theme A gradually insinuates itself once more via the slow music of Theme C^1 and the "chorale" statements of Theme C^4. But the retrenchment extends further into the musical fabric, effecting the harmonic domain also. In the light of the relative success enjoyed in modelling earlier harmonic dualities in Schuman's music, to what extent may these relationships (between melody and harmony, fast music and slow music, tragedy and exuberance) be modelled in terms of pitch-class set genera?

The first of the two principal pillar sonorities takes the form of the symmetrical tetrachord 4-7 [0,1,4,5], and materialises in b. 137, immediately following the initial presentation and subsequent development of Theme D (see Ex. 8.6). In addition to the emphasis afforded its presentation (isolated in the distinct stratum of trumpets and trombones) and its temporal proximity, the association between 4-7 and Theme D is also manifest in the inclusion relationship (4-7 Kh 6-z19/z44) between the chord and the hexachordal pair formed by the progressive unfolding of the chromatic in the theme (Ex. 8.4). The second pillar sonority is also symmetrical, forming the tetrachord 4-3 [0,1,3,4].[20] It is first encountered in b. 280 during the course of a remarkable passage (considered further below) that marks the transition from the first half of the Offertorium, bounded by 4-7 sonorities, to the 4-3 dominated second half (see Ex. 8.7). The new sonority is most clearly affirmed, however, in b.458, immediately prior to the first "chorale" statement of C^4 (see Ex. 8.8). The affiliation between this sonority and the slow music of the outer sections of the work is apparent in the inclusion relationships enjoyed between 4-3 and the hexachordal pair outlined by the unfolding chromatic in Theme A (4-3 Kh 6-z3/z36), a relationship also enjoyed by the opening phrase of the theme (4-3 Kh 7-16) shown in Ex. 8.4.

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[20] McKinley examines both tetrachords, but her attention is primarily directed to their origins in interlocking interval structures (1977, bb. 113 and 119).

Ex. 8.5 charts the overall framework of pillar chords, highlighting the shift of emphasis from 4-7 to 4-3. Also charted are the occurrences of principal themes, and in bare outline, important sonorities and melodic formations seen to reinforce this structure. For example, the twelve-tone vertical sonorities introduced in the concluding bars of the Anteludium continue to mark important junctures in the structure of the Offertorium. They are identified (as in Fig. 8.1) by their outermost pitch-classes, here connected by a vertical line. Among other features identified are the striking woodwind canon with its 4-7 head-motif, heard twice (bb. 226 and 312); the timpani figure [F, G, Ab], recurring throughout the Offertorium; and the 'verticalisation' of the opening pentachord of Theme D (5-20) on its restatement at b. 232. This undeniably broad depiction of the formal framework provides a necessary context for the more detailed examination of the three passages mentioned above: the initial presentation of the 4-3 pillar chord (bb. 137-64), the subsequent transition (bb. 276-84), and the eventual affirmation of the new 4-3 sonority (bb. 451-536), shown in Exs. 8.6, 8.7 and 8.8 respectively.

The symbiotic relationship between melody and harmony is nowhere more clearly projected than in the first of these passages. Announced with typical directness, the 4-7 [9, 10, 1, 2] pillar chord forms the backdrop (sustained over ten bars) to Theme B^2 (Ex. 8.6). The opening two-bar phrase of the theme presents a microcosmic view of the relationships (between vertical and horizontal sonorities and between generic identity and non-identity), that characterise and define the Offertorium. The phrase as a whole forms the literal complement 8-7 [3, 4, 5, 6, 7, 8, 11, 0] of the tetrachord sustained beneath it, while within the phrase successive figures outline an ABA pattern of inclusion and non-inclusion. (For ease of identification, in Ex. 8.6 sets that are *not* sub- or supersets of 4-7 are circled). Thus the rising figure 5-6 is one of four pentachordal 4-7 supersets (all of which are formed as vertical sonorities during this passage).[21] The extension of the phrase to Gb^6, however, forms the set 5-7, unrelated by inclusion to the prevailing 4-7. The phrase concludes with the (literal) complement of the vertical 4-7 superset 5-21 [1, 2, 6, 9, 10](formed on the first beat of b. 141), namely 7-21 [0, 3, 4, 5, 7, 8, 11]. On a slightly larger scale, the structure of the melody presented over this initial 4-7 sonority (bb. 140-46) follows a similar ABA pattern of inclusion and non-inclusion. The melodic units outlined in bb. 142-43 reaffirm the pre-eminence of 4-7 related sets, forming further Kh relations (4-7 Kh 7-6, 5-6, 6-z19 and 9-3). This pattern of association is decisively broken, however, in the following two-bar span (bb. 144-45), where very different melodic formations accrue, characterised at this stage more in terms of their dissimilarity to prevailing norms than in terms of coherent relations between themselves: only 9-5 forms an inclusion relationship with 4-7 (then only k+, as opposed to the closer Kh relation enjoyed by 4-7 and 9-3. It is difficult to reconcile, for example, the chromatic 4-1 (b. 144) and the distinctly whole-tone 4-24 and 5-28 (b. 145). Such diversity is indicative of difficulties to be faced in defining a generic model for the relations at work here. What is not in doubt, however, is the decisive return to the 4-7 realm in b. 146. Here the melodic line again exposes the literal complement (8-7) of the prevailing 4-7 sonority.

'Panning out' still further, this initial exposure of the 4-7 sonority may in turn be viewed in the context of a still broader ABA formal scheme spanning bb. 137-64 (Ex. 8.6). The continuation of the passage examined above sees the superimposition of two 4-7 sonorities (on trumpets and horns, followed by trombones and tuba), combining to form the chromatic octad 8-1 (bb. 147-48). Although the sonorities are distinct both registrally and temporally (the upper chord is established before the superimposition of the lower chord), the chromatic sum of their parts (8-1) is in marked contrast to the harmonic transparency of the preceding passage. The difference is further reflected in

[21] Of these (5-3, 5-6, 5-z18 and 5-21) only 5-3 is also a superset of the second pillar chord, 4-3.

the melodic domain where, with two exceptions, melodic formations assiduously avoid sub- and supersets of 4-7. Only the reiterated scalic phrase outlining the set 9-3 (bb. 151-2 and 155), and the 'tail' phrase 8-19 (bb. 156-57) form inclusion relations with 4-7.[22] Following this highly chromaticised central passage, the 4-7 domain is re-established in bb. 158-64. Two 4-7 chords are again superimposed, but this time to form the 4-7 (k+) superset 7-22, immediately followed by a further superimposition one tone higher (bb. 158-60). A further 4-7 chord is added in b. 161 (forming the chromatic 10-1), but the initial 4-7 pair quickly falls away, leaving the new 4-7 exposed. Confirmation that the prevailing 4-7 'order' is restored comes in the shape of a final melodic phrase comprising a 4-7 head-motif, and outlining the now familiar Kh related set 9-3.

This detailed reading of this passage serves to highlight a number of important developments in Schuman's approach to pitch-class set relations. As so often, the guiding principles of the music's structure are set out with particular clarity in the first instance. In contrast to the Sixth Symphony, however, where the opposition of distinct orbits of sets was projected within the context of a more universal distinction between the diatonic and the chromatic, the Ninth Symphony exploits a polarity between sonorities that are defined solely in terms of their immediate context. Identity is established on the basis of the joint forces of complement and inclusion relations within the twelve-tone universe, forging a network of close (primarily Kh) relations about the focal sonorities. The implications for the modelling of such structures in terms of genera theory will be explored below. The set data for this passage are presented as Fig. 8.2.

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[22] As noted above, the set 9-3 is in the relation Kh to 4-7, while 8-19 is a less closely affiliated (k+) superset. The circulation of the total chromatic in the melodic domain is an additional feature worthy of note. The opening phrase (bb. 149-51^{1}) unfolds the total chromatic. In the passage that follows, however, partial completion (set 11-1) is achieved quickly (bb. 451^{2}-52^{3}), but the elusive pitch-class A is withheld until the very end (b. 157).

Fig. 8.2 Pitch-class set data bb. 137-64

Melodic:	#3: 1, 2, 3, 4, 5, 7, 8	#4: 1, 7, 24
	#5: 6, 7, 8, 19, 28	#6: z13, z19, 21, z40
	#7: 6, 8, 21	#8: 7, 19
	#9: 3, 5	
Vertical		#4: 7
	#5: 3, 6, z18, 21	#6: z3, z29, z44
	#7: 22	#8: 1
	#9: 1, 2	

The introduction of 4-3 as an alternative pillar sonority is instigated via hard-edged brass sonorities, the comparative function of the new sonority affirmed by timbral association. The first presentation of Theme C^1 from b. 263 is accompanied by hocket-like melodic patterns between woodwind and trumpets, forming successive 4-7 sonorities. Indicative of the imminent change, however, are the 4-3 head-motif of the theme itself [Eb, D, F, F#] (see Exs. 8.1 and 8.5), and the onset of the persistent timpani ostinato [F, G, Ab], forming the defining 4-3 subset 3-2.[23] The concluding bars of this passage are shown in Ex. 8.7. The decisive moment of transition is heard with the onset of the descending scalic figuration in trumpets and woodwind (b. 276). Comprising further successive 4-7 sonorities, the descending scale figure outlines the set 5-10, one of five 4-3 pentachordal supersets.[24] Melody and harmony are brought into generic accord via a two-bar inversion of the 5-10 scales in bb. 278-79 (now in parallel minor thirds, an interval common to both pillar chords). In b. 280 a slightly revised descending scale figure resumes in parallel minor thirds (5-8), with a rising figure in contrary motion forming vertical 4-3 sonorities at the boundaries of these scale figures ([E, F, G, Ab] and [Bb, B, Db, D]). The revised scale (5-8) is not a superset of 4-3, but the original 5-10 scale is reclaimed at the end of the following bar (b. 281).[25] The shift is by no

[23] Trichordal subsets of the principal tetrachords are as follows: 4-7 Kh 3-3, 3-4; 4-3 Kh 3-2, 3-3.
[24] They are: 5-1, 5-3, 5-10, 5-16 and 5-z17.
[25] The generic affiliation of these alternative figurations will be explored below.

means decisive, but it is representative of a sea-change in the generic profile of the Offertorium. The set data for this passage are presented as Fig. 8.3.

Fig. 8.3 Pitch-class set data bb. 273-84

Melodic	#3: 2, 5	#4: 2, 4, 5, 13, 14, 18
	#5: 6, 8, 9, 10, 28	#6: 34
	#9: 1, 7	
Vertical	#3: 2, 3, 7, 10, 11	#4: 2, 3, 7, 8, 10, 11, 12, 13, 17, 19, 27, z29
	#5: 3, 6, 10, 16, z18, 21, 27	#6: z4, 5, z6, z10, z11, 14, 15, z19, 20, z43, z44

Returning to the broader view, Ex. 8.5 illustrates the long range connection between this transitional passage and the ultimate confirmation of 4-3 in b. 458. The 4-3 sonority [E, F, G, Ab] that marked the transition in Ex. 8.7 (b. 280) returns (again on trumpets) in b. 446. A chromatic accumulation of pitches sees the sonority become nested in the 10-6 chord that in turn heralds the return of the 5-10 scalic figuration in b. 451, now formed entirely of 4-3 vertical sonorities, a transformed reflection of the 4-7 passage heard in bb. 276-77 (Ex. 8.8). The focal pillar chord that underpins the remainder of the Offertorium is reached via further cumulative vertical formations, culminating in the 4-7 superset 5-6, sustained beneath the 4-3 scalic pattern (bb. 453-57). The final and decisive shift to the 4-3 realm, grounded on C# [C#-A#-D-B], is thus articulated by the 'cadential' juxtaposition of 'opposing' sonorities 5-6 and 4-3.[26]

The decisive nature of the sea-change enacted here is reinforced by the subdued, but evocative use of unpitched percussion, deployed for the first time in the work, and heard to introduce and accompany the first statement of the "chorale" Theme C^4 in the brass (bb. 463-89). The newly established pillar chord provides a framework for this, and the subsequent statement of the "chorale" on strings (bb. 490-516), with additional

[26] The principal manifestations of the pillar chords (represented by the open note-heads in Ex. 8.5) are essentially static with regard to pitch, both grounded on C# (Db). Similarly, the transition from 4-7 to 4-3 is negotiated between two chords that hold three pitches in common ([E, F, Ab, A] becomes [E, F, G, Ab]). The overall 'dynamic' of the Offertorium appears, therefore, to operate primarily in terms of sonic identity, with pitch priority providing a predominantly static framework for the play of generic forces.

allusions to Theme 'B-type' materials in the upper woodwind. The first (brass) setting of the chorale is illustrated in Ex. 8.9 (percussion omitted), but both settings are almost identical, harmonising the melody in a homophonic, predominantly tetrachordal, texture. Considerations of voice leading have some bearing upon the progress from one chord to the next, individual voices often progressing by step, but the pre-eminent concern appears to be for the maintenance of a consistent tetrachordal texture. The end of each phrase is then heard to 'home in' on the pre-eminent 4-3 sonority, often invoking the ghost of traditional voice leading in anticipation of the implied 'resolution'. The link between melody and harmony, meanwhile, could not be stronger, the "chorale" theme itself outlining the set 4-3. From b. 504 the second, string setting of the chorale is reclaimed by the brass, leading to what is effectively the climax of the work, the successive twelve-tone chords of bb. 521-27 (Ex. 8.10). The final 4-3 pillar chord effects the transition into the Postludium (b. 536).[27] The sets delineated in Exs. 8.8 - 8.10 are listed in Figs 8.4 - 8.6.

Fig. 8.4 Pitch-class set data bb. 451-61

Melodic	#3: 2 #5: 10	#4: 3
Vertical	#3: 1 #5: 6, 10, 16 #7: 1, 6, 21 #9: 5	#4: 3, 4 #6: z4, z6, 16, z43

Fig. 8.5 Pitch-class set data bb. 463-90[2]

Melodic	#3: 2	#4: 3
Vertical	#3: 2, 3 #5: 10, 16	#4: 1, 2, 3, 4, 7, 10, 11, 12, 13, z15, 17, 18 #6: 33, z43, z46

[27] McKinley's (1977, p. 337-38) identification of the Postludium appears to be misplaced (despite apparent corroboration by the composer). Schuman's programme note (cited above) clearly refers to the Postludium echoing "in slow tempo, some elements of the climax just heard", a reference to the ritardando and the cumulative accretion of vertical pitches towards the twelve-tone chord of b. 545; a reading confirmed by Clark (1982, p. 212).

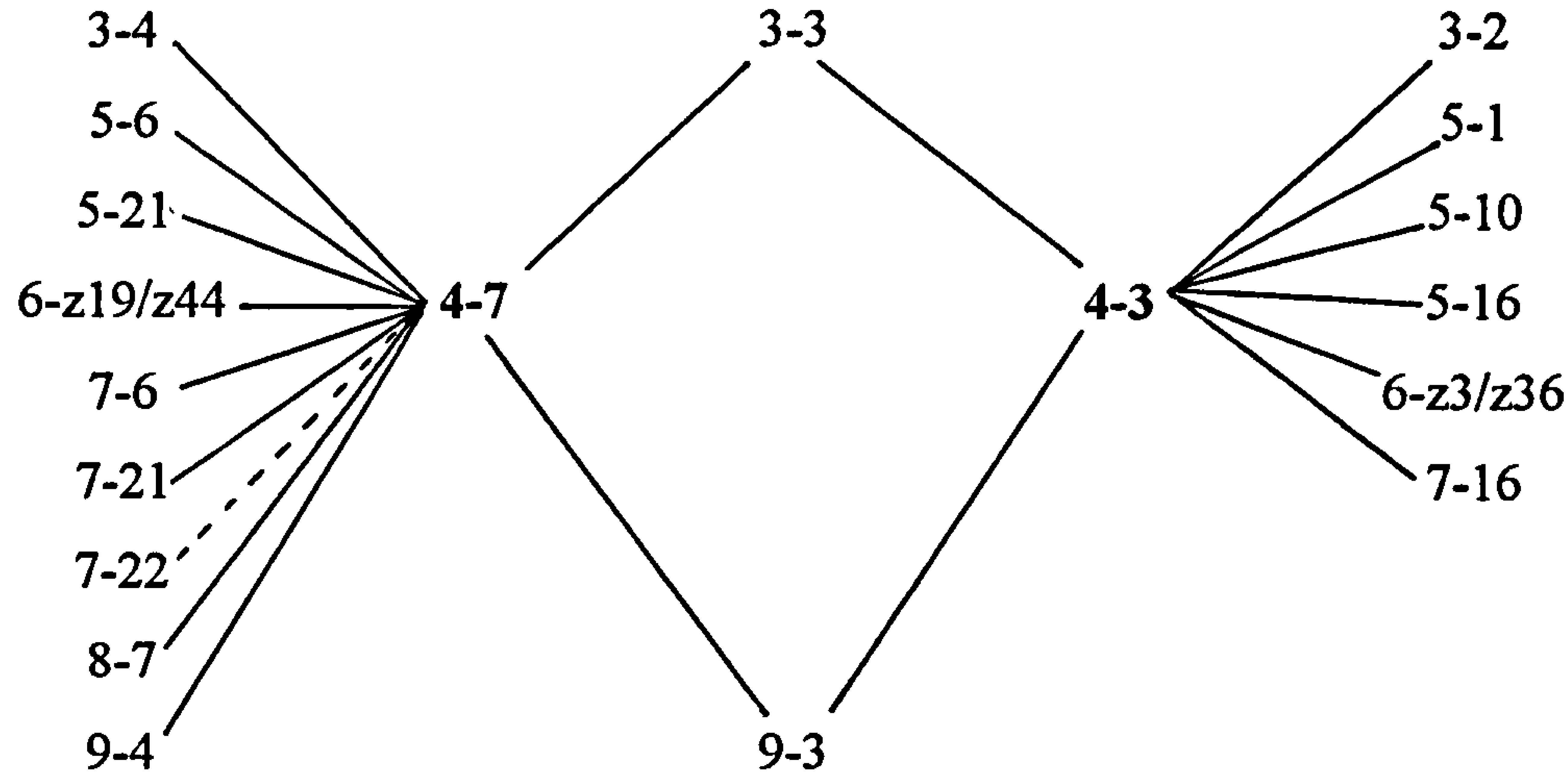
Fig. 8.6 Pitch-class set data bb. 508[4]-545

Melodic	#3: 2	
	#5: z12	#6: z42
	#9: 4	#8: 5
Vertical	#3: 1, 2	#4: 3
	#5: 1, 4	#6: z3, 20, z26, 33, z43, z46
	#7: 5, 7, 13, 21, 29, 30	#8: 6
	#9: 5	

Towards a model of pitch structure

The passages considered above trace a decisive shift of orientation across the central span of the Ninth Symphony, articulated primarily in terms of clearly defined pillar sonorities as part of a carefully integrated musical texture, with associations between the pillar sonorities and the melodic materials most sharply drawn at moments of structural articulation. The relationship established between these sonorities and particular types of melodic material articulates a broader formal transition that sees the sombre aspect of the Anteludium gradually reaffirmed as the Offertorium unfolds. In general terms a link is forged between the relatively outgoing music characterised by Theme D and the more 'open' pillar sonority 4-7 [0, 1, 4, 5], and between the more introspective music of the work's outer sections, characterised by Theme A, and the more 'closed' 4-3 [0, 1, 3, 4]. The distinction drawn is a fine one, representing an incremental shift along what may be seen as a continuum of more or less closely related sonorities. Within this spectrum of association unambiguous distinctions are drawn between the close orbits of sets around each of the primary tetrachords, most clearly represented in terms of fully realised Kh inclusion relationships. These associations are summarised in the form of an inclusion matrix (Fig. 8.7) illustrating the network of sets about each pillar sonority encountered in the examples examined above.[28] Exclusive associations occupy the outer reaches of the matrix, with the trichord/nonad 3/9-3 common to both tetrachords at the centre.

Fig. 8.7 Inclusion matrix: principal associations with pillar sonorities



The initial presentation of the 4-7 pillar (Ex. 8.6) quickly evoked a network of inclusion relations, cementing the vertical and horizontal dimensions of the music and affording particular salience to complement pairs. By contrast the priority afforded 4-3 rests on a less comprehensive, but no less exclusive, exposition of inclusional relations, achieving pre-eminence on the basis of the salience attached to a small orbit of sets. In either case an inner orbit of sets is seen to set the generic tone in the context of a wider orbit of weaker association. Effective generic models of pitch structure must be capable of reflecting these shades of association.

It is at this point that the reality of the "expanded tonal palette", seen to characterise a significant shift in Schuman's stylistic evolution, is fully appreciated. Even in the context of the isolated examples considered above, where generic associations are likely to be most clearly focussed, the range and diversity of the totality of sets encountered is such that effective cynosures fulfilling the criteria set out are difficult to isolate, other than at an extremely local level. The nature of the problem was anticipated in considering the initial presentation of the 4-7 sonority above (Ex. 8.6). While the generic focus about 4-7 is clearly articulated, those moments of divergence that serve to set the generic priority of 4-7 into relief are more difficult to account for.

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[28] The only non-Kh relation shown in Fig. 8.7 is the k+ relation between 4-7 and 7-22.

Such generic diversity is particularly apparent in the passage from bb. 148-56. The chromatic vertical sonorities (8-1, 9-1, 9-2), while obviously supersets of 4-7, perhaps owe a closer allegiance to those more chromatically inclined sets associated with 4-3. At the same time a number of melodic formations (for example 5-8, 6-21, 6-z40) exhibit, at best, a tenuous inclusional connection with potential cynosures directly related to the primary tetrachords, a situation that is compounded as the number of sets encountered in later, less focussed passages increases.[29] It quickly becomes clear that generic relationships are constituted not in terms of a straightforward 4-7/4-3 duality (regardless of the precise constitution of such genera), but with the primary tetrachords as focal points within a more fluid ("intuitive") network of association. Viewed in these terms, the universal network of genera relations proposed by Forte would appear to provide a valuable 'neutral' matrix against which to measure such shifting patterns of association.[30]

The criteria determining the trichordal progenitors of Forte's genera (considered in Chapter 2, p. 52) provide for a clear distinction between the each of the focal tetrachords and their associated orbits of sets. In the case of those genera with dual progenitors, it will be recalled that each genus member must be a Kh relation of both trichordal progenitors. Thus while 4-7 and 4-3 hold the trichord 3-3 in common, they are distinguished in terms of genus membership by their remaining trichordal subsets, 3-4 and 3-2 respectively. The trichordal subsets of 4-7 form the progenitors for Genus 8, and those of 4-3 the progenitors for Genus 6. With each tetrachord containing only two

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[29] The paucity of engagement by these melodic formations with potential cynosures associated with the primary tetrachords in Fig. 8.7 is demonstrated by the following inclusion matrix:

	3/9-2		3/9-3		3/9-4		4/8-3		4/8-7		5/7-1		5/7-6		5/7-10		5/7-16		5/7-21		6-19/44	6-3/36
5-8	x	x	x	x		x		x				x				x						
6-21	x	x	x	x	x	x																
6-40	x	x	x	x	x	x		x		x						x						

[30] This conclusion regarding the difficulties faced in constructing effective Parksian models is based upon the experience of prolonged attempts to do so in accordance with the methodology outlined in the previous chapter. On the "heuristic" nature of analyses employing Forte's genera, as opposed to the "hermeneutics" of Parksian models, see Ayrey (1998a, p. 175) and Parks (1998b, p. 237).

trichordal subsets they form highly characteristic, singleton members of their respective genera.[31] Reference to Forte's table displaying the distribution of all twelve genera (reproduced and updated in Chapter 2 as Table 2.3) reveals not only the relative positions of the two genera, but also the further associations afforded via their respective Supragenus membership. Genus 8 forms part of the Supragenus III (comprising Genera 8, 9, and 10), while Genus 6 forms part of the smaller Supragenus II (comprising Genera 5 and 6).

The tripartite structure of Ex. 8.6, discussed above, is reflected in the shifting genera profile for each section (Tables 8.5 - 8.7). The range of generic association invoked in Table 8.5 presents a representative profile in the context of this work.

Table 8.5 bb. 137-46

	G1	G4	G5	G7	G8
3-1			o		
3-2			o		
3/9-3					o
3-4					o
3/9-5	o				
3-7				o	
4-1			o		
4/8-7					o
4-24		o			
5-3					o
5/7-6					o
5-7	o				
5-18					o
5/7-21					o
5-28	o				
6-3					o
6-19/44					o
6-29	o				
Count:	4	1	3	1	9

Squo indices

(Full)

.122: G8	(atonal)
.096: G5	(chroma)
.080: G4	(augmented)
.071: G1	(atonal)
.062: G7	(chroma-dia)

(Reduced)

.122: G8	(atonal)
.057: G5	(chroma)
.035: G1	(atonal)
.026: G4	(augmented)
.012: G7	(chroma-dia)

The focal 4-7 genus (G8) achieves the highest Squo ranking, accounting for significantly more sets than any other genus. Overall, however, it only embraces half the

[31] Genus 8 contains an additional singleton member, the tetrachord 4-4, but with a total of four trichordal subsets (3: 1, 3, 4, 7) it presents a less characteristic profile.

sets in the matrix, with the remaining sets spread over a further four genera. In second place is Genus 5 (chroma), the Supragenus II counterpart of the '4-3' Genus 6. Its progenitors (3-1 and 3-2) form the strongest link with those sonorities intuitively associated with the extreme '4-3' end of the generic spectrum, in the present case 3-1 (b. 142), and 3-2 and 4-1 (b. 144). In the set/complement world of Fortean genera, such sonorities are also associated with the dense chromatic sonorities (8-1, 9-1 etc) that achieve their ultimate manifestation (though not one accountable in generic terms) in the twelve-tone chords heard to punctuate the work.

Within the 9-5 phrase (b. 145) 4-24 invokes Genus 4, which, due to its small size, occupies third place in the Full Squo indices, a position that is realigned in the Reduced Squo listing. The fourth placed genus (G1), meanwhile, engages with the reduced matrix to a greater extent (see the Reduced Squo profile), and will be seen to play an important role as the work proceeds. Its progenitor (3-5) is most immediately associated with the <+1–6> motive Ac of Theme A (Ex. 8.1), but it is also manifest in the timpani figure [C#, F#, G] associated with the outer sections of the work. In the present context (Ex. 8.6) Genus 1 may be seen to embrace not only the melodic phrase 9-5 (and within it, the concluding gesture 5-28), which is heard to articulate the local ABA structure (bb. 144-45), but also the set 5-7, which is heard to perform a similar articulative function at the centre of the opening two-bar melodic phrase (bb. 140^{4}-41^{1}).

On the larger-scale, the ABA structure articulated across bb. 137-64 reinforces the generic profile outlined in bb. 137-46. The central 'B' section (bb. 147-58) is profiled in Table 8.6, demonstrating the pre-eminence of the "chroma" Genus 5, most notably in the form of the chromatic vertical sonorities 8-1, 9-1 and 9-2, but also through the melodic formations 5/7-8 and 6-z40. The generic allegiance of such "multivalent" sets is a product, of course, of the distribution of sets across the matrix as a whole. Here they are contextualised by their ("chroma") harmonic setting, in other circumstances they may find generic affiliation elsewhere.[32] Genus 9, representing the '4-7' Supragenus III, achieves second place in the Squo rankings, manifest in the 9-3 scalic figuration heard in bb. 151-52 (reiterated at pitch in b. 155), the melodic 'tail' phrase 8-19 (bb. 156-57), and the melodic sets 6-z13 (bb. 152-53) and 5-19. The only representative of Genus 8 here is 4-7 itself. The sequentially defined 5-19 subset 3-5 invokes Genus 1 as its sole trichordal progenitor (bb. 155-56). Similarly, Genus 7 (achieving second place in the Squo ranking) finds the process of reduction leaving 3-7 as its sole representative.[33] As previously (b. 146) the trichord achieves low saliency as part of a reiterative contour pattern subsumed by a larger segment, suggesting perhaps, the location of generic identity within larger segments (see also the Genus 2 progenitor 3-8 (bb. 150-51)).

Table 8.6 bb. 147-58

	G1	G2	G5	G7	G8	G9
9-1			o			
9-2			o			
9-3						o
3-5	o					
3-7				o		
3-8		o				
8-1			o			
4-7					o	
8-19						o
5/7-8			o			
5-19						o
6-(11)/40			o			
6-13						o
6-21			o			
Count:	1	1	6	1	1	4

Squo indices
(Full)

.148: G5	(chroma)
.105: G9	(atonal-tonal)
.095: G7	(chroma-dia)
.087: G8	(atonal)
.066: G2	(whole-tone)
.057: G1	(atonal)

(Reduced)

.148: G5	(chroma)
.070: G9	(atonal-tonal)
.017: G8	(atonal)
.016: G7	(chroma-dia)
.011: G1	(atonal)
.011: G2	(whole-tone)

The return to the 4-7 domain in b. 158 (Table 8.7) is comprehensive, engaging only Genus 8, with the set 7-22, potentially a member of five other genera, being claimed unequivocally as a representative of Genus 8.

[32] However, only 6-z40 is sufficiently multivalent to be embraced by any genus within the '4-7' Supragenus III.
[33] A factor reflected in the Reduced Squo ranking.

Table 8.7 bb. 158-64

	G8
9-3	o
4-7	o
5-3	o
5-6	o
5-18	o
5-21	o
7-22	o
Count:	7

Squo index
.244: G8 (atonal)

A number of important trends may be identified in this account of shifting patterns of generic allegiance. The profiles displayed closely mirror the broad ABA pattern of association about the 4-7 pillar sonority, but in terms that are less than 'black and white'. Earlier criticism of Fortean genera profiles exhibiting a scattered distribution of sets centred upon the fact that alternative (Parksian) models afforded more consistent patterns of affiliation. In the present context, however, no such alternatives stand out, prompting a reappraisal of the principles governing set relations. As suggested above, in contrast to the relatively clear-cut harmonic duality projected in the Sixth Symphony, the pillar sonorities presented here form the focus of a shift of harmonic emphasis within the context of a highly intuitive development process. As such the genera associated with them form part of a complex network of set relations embracing a relatively broad harmonic spectrum. The shift of emphasis from the 'open' sounds of Theme D and the 4-7 sonority, characteristic of the Offertorium, to the greater chromatic density associated with the outer sections of the work (characterised by Theme A and the 4-3 sonority), takes place within this wider sphere. The experience, then, is one of shifting generic hegemony as the Offertorium progresses, and the darker reality of the work's extra-musical inspiration regains its hold. (In such circumstances the appropriateness of Forte's (1988b, p. 204) choice of the term 'hegemony', with its associations of cultural/political struggle, to describe the process whereby a genus may be seen to embrace sets displaying multiple allegiances on the basis of its superior representation within a given context, appears metaphorically apt.)

Generic profiles for the remaining passages examined here confirm not only the generic shift described, but also the sense in which it takes place within the context of a wider network of generic affiliation. The transition from 4-7 to 4-3 (Ex. 8.7 and Tables 8.8 - 8.9), provides an illustration of the struggle for generic hegemony. The approach to the transition (indicated by the inversion of the scalic figuration in woodwind and brass in b. 278) sees the '4-7' Genus 8 clearly ascendant (Table 8.8), with its claim pressed by the cumulative force of multiple 4-7 supersets as vertical sonorities.[34] Such hegemony draws in the multivalent melodic formation 6-34 (a potential member of eleven genera), and further engages the melodic 4-14 as a member of the wider Supragenus III. Only the trumpet melody line (9-1 and 5-10) and the timpani ostinato (3-2) presage the shift towards the '4-3' Genus 6/Supragenus II.

Table 8.8 bb. 273-77

	G1	G5	G6	G7	G8	G10
9-1		o				
3-2		o				
9-7				o		
4-7					o	
4-14						o
5-3					o	
5-6					o	
5-10			o			
5-18					o	
5-21					o	
5-27						o
6-4					o	
6-5					o	
6-6	o					
6-10					o	
6-11					o	
6-14					o	
6-15					o	
6-16					o	
6-(17)/43					o	
6-19/44					o	
6-20					o	
6-34					o	
Count:	1	2	1	1	16	2

Squo indices
(Full)

.170: G8	(atonal)
.150: G5	(chroma)
.148: G10	(atonal-tonal)
.126: G6	(semichroma)
.106: G7	(chroma-dia)
.090: G1	(atonal)

(Reduced)

.170: G8	(atonal)
.030: G5	(chroma)
.021: G10	(atonal-tonal)
.010: G6	(semichroma)
.010: G7	(chroma-dia)
.007: G1	(atonal)

[34] Of the vertical sonorities invoked, only the 4-7 superset 6-z6 falls outside the prevailing genus. It is unusual for a hexachord, showing allegiance to only two genera, G1 and G2.

The sense of transition yet to be confirmed, identified in the initial description of the passage from b. 278, is reflected in the generic profile (Table 8.9). The '4-3' Genus 6 achieves control, heading the Squo ranking and repulsing rival statistical claims from larger genera in terms of percentage of potential realised.[35] Overall, however, the profile is less focussed than that for the previous section, with no single genus dominating to the extent achieved in earlier profiles of 4-7/Genus 8 'hegemony'.

Table 8.9 bb. 278-84

	G1	G3	G6	G7	G8	G9
3-2			o			
3-3			o			
3-5	o					
3-10		o				
3-11						o
4-2			o			
4-3			o			
4-4					o	
4-5	o					
4-7					o	
4-8	o					
4-10				o		
4-11				o		
4-12			o			
4-13		o				
4-17						o
4-18		o				
4-19					o	o
4-27		o				
4-29	o					
5-3			o			
5-6					o	
5-8			o			
5-9			o			
5-10			o			
5-16			o			
5-21					o	o
5-28			o			
Count:	5	4	11	2	4	4

Squo indices

(Full)

.087: G6	(semichroma)
.071: G3	(diminished)
.062: G1	(atonal)
.061: G8	(atonal)
.061: G9	(atonal-tonal)
.056: G7	(chroma-dia)

(Reduced)

.087: G6	(semichroma)
.035: G8	(atonal)
.035: G9	(atonal-tonal)
.032: G3	(diminished)
.028: G1	(atonal)
.016: G7	(chroma-dia)

[35] The percentage of potential claims of G1 and G2 are strong, however, realising 39.0% and 35.7% respectively, as opposed to the 39.2% achieved by G6. Greatest significance should perhaps be attached to the fact that no single genus realises a majority of its potential, confirming the state of generic flux sensed here. The relatively small size of all the matrices considered here ensures that all but the very smallest genera (Genus 4, a significant contributor to none of these profiles) have the potential to achieve their own (genus) maximum Squos. Percentages of potential were calculated for all matrices and were found to confirm the foremost ranked genera in all cases.

A significant factor in this less focussed profile is the relatively high proportion of tetrachords represented in the matrix. As noted in Forte's original presentation (1988b, p. 204) the generic exclusivity of many tetrachords may "skew an analysis in which a genus or genera unrelated to them are, in fact, principal contributors to the music under consideration." In the present case the relative salience attached to particular sonorities is an additional factor to be considered in the interpretation of the generic profile. Of the tetrachords falling outside the principal Supragenera II and III, the singleton members of Genus 7 (4-10 and 4-11) fall exclusively on unaccented beats, forming the generic equivalent of passing sonorities between more generically dominant sets. The interaction of the rising scale figure in parallel thirds with the timpani and sustained C# in the strings (b. 278) illustrates the point, with the quaver beat articulating alternate G6 (strong) and non-G6 (weak) sonorities. Similarly in b. 280 the G7 tetrachord 4-10 falls between successive, metrically stressed G6 and G9 sonorities (4-3 and 4-17), furnishing further evidence of the inadequacy of statistical data alone in interpreting the generic profile of a particular passage. The underlying instability of this passage is confirmed, not only by the return to '4-7' Supragenus III members in the closing gesture of the passage (4-17, 4-19 and 5-21 in bb. 282-94), but by the further expansion of the range of genera invoked in the form of Genus 3, a close relative of Genus 1.[36] The progenitor of Genus 3 (3-10) may in turn be found in the Theme A motive Ae (+3–6).

Such is the generic coherence of the extended passage marking the decisive confirmation of 4-3 as the focal sonority from b. 451, that the final transition and the subsequent chorale C^4 (Exs. 8.8 and 8.9), may be profiled as single matrix encompassing only twenty-seven sets or complement pairs (Table 8.10). The ascendance of Genus 6 is confirmed by the Full Squo ranking, with its Supragenus II

[36] As a co-member of Supragenus I, but also in terms of their 'Difquo' value, the measure of generic 'difference' devised by Forte (1988b, pp. 220-24), with Genus 1 and Genus 3 occupying fifth place on a table of increasing difference between forty-three possible pairings (ibid., p. 223).

counterpart (G5) in second place. The 'cadential' intervention of the 4-7 superset 5-6 in b. 455, prior to the 4-3 pillar sonority in b.458, is reflected in the third placed Genus 8, accommodating also the 4-7 co-singleton 4-4, and the vertical sonorities 7-6 and 7-21 (bb. 455-56).

Table 8.10 bb. 451-90

	G1	G5	G6	G7	G8	G9
3-1		o				
3-2			o			
3-3			o			
9-5	o					
4-1		o				
4-2			o			
4-3			o			
4-4					o	
4-7					o	
4-10				o		
4-11				o		
4-12			o			
4-13	o					
4-15	o					
4-17						o
4-18	o					
7-1			o			
5/7-6					o	
5-10			o			
5-16			o			
7-21					o	
6-4			o			
6-6	o					
6-16			o			
6-(17)/43			o			
6-(24)/46			o			
6-33	o					
Count:	6	2	12	2	4	1

Squo indices
(Full)

.099: G6	(semichroma)
.089: G5	(chroma)
.081: G8	(atonal)
.076: G1	(atonal)
.072: G9	(atonal-tonal)
.058: G7	(chroma-dia)

(Reduced)

.099: G6	(semichroma)
.036: G8	(atonal)
.035: G1	(atonal)
.026: G5	(chroma)
.016: G7	(chroma-dia)
.009: G9	(atonal-tonal)

The predominantly tetrachordal harmonisation of the chorale theme inevitably invokes a greater range of genera, but the resulting dilution of the generic profile is insufficient to unseat Genus 6 from its position of priority.[37] In addition to the location of the 4-3 sonority at the conclusion of each phrase, and reiterated in the chorale melody itself, the Genus 6 progenitors (3-2 and 3-3) may be seen to form the only trichordal

[37] A genera profile of the chorale alone (bb. 463-89) confirms this reading, with Genus 6 again the highest ranked genus (.105), accounting for nine of nineteen sets.

sonorities during this passage (bb. 482 and 485). The hegemony of Genus 6, confirmed by the statistical distribution of sets across the matrix, sees the climactic hexachords 6-z43 and 6-z46 (potential members of eight and nine genera respectively) both embraced by the dominant genus. The familiar 'gapped' diatonic 6-33 (a potential member of seven genera), on the other hand, fulfils a familiar 'cadential' role, on this occasion as a member of Genus 1, breaking the chain of Genus 6 sonorities that precede the 4-3 pillar in b. 489.[38]

A notable feature of these hexachordal sonorities is their triadic content, a factor emphasised by the distribution of pitches in the musical texture, and seemingly at odds with the great majority of melodic and harmonic materials deployed throughout the work. This is most immediately apparent in the case of 6-33 (comprising G minor and F minor triads), but at the comparable point marking the conclusion of the second chorale setting (bb. 508-16, shown at the beginning of Ex. 8.10), two further hexachords (6-z26 and 6-20) are invoked (bb. 512 and 514), extending still further the range of triad based sonorities. It is such apparently intuitive expansions of the harmonic palette that are particularly difficult to accommodate in terms of Parksian genera models. In the present case, of the five hexachords (6-20, 6-z26, 6-33, 6-z43 and 6-z46), only 6-20 and 6-z43 enjoy inclusion relationships with either of the primary tetrachords (6-20 Kh 4-7 and 6-z43 k+ 4-7).[39] A more coherent reading is possible, however, in relation to the more fluid range of association proscribed by the 4-3/Supragenus II and 4-7/Supragenus III.

The increased emphasis upon triad-based hexachords, and the additional vertical sonorities resulting from their interaction with the insistent timpani figure [F, G, Ab],

[38] Schuman's evident fondness for this hexachord as a cadential sonority was observed in both the earlier symphonies examined.
[39] 6-z46 is in the relationship k to 4-3, but neither complement (6-z24 or 8-3) plays a part in the music that might suggest a cynosural role. (In other words, in a table of inclusion relationships of the type employed in previous (Parksian) analyses it would register a 'k–' (null) entry.) Similarly, of potential cynosures featured in the inclusion matrix about the pillar sonorities (Fig. 8.7) only the rather profligate 9-3 (156 sets) engages with these hexachords with any consistency, but it fails to include 6-33.

results in a marked shift of generic emphasis as the second chorale setting draws to a close. The admittedly small genera matrix for this passage (Table 8.11) sees the combination of these sonorities re-centre the genera profile about Genus 10 (the third member of Supragenus III), embracing all the triad-based hexachords within that genus. In addition, the melody line delineates an additional Supragenus III set, 6-z42 (Genus 9).

Table 8.11 bb. 508^4-16

	G1	G6	G9	G10
3-2		o		
7-7	o			
7-13				o
7-21				o
7-29				o
7-30				o
6-(13)/42			o	
6-(17)/43				o
6-20				o
6-(24)46				o
6-26				o
6-33				o
Count:	1	1	1	9

Squo indices

(Full)	
.183: G10	(atonal-tonal)
.142: G9	(atonal-tonal)
.119: G1	(atonal)
.074: G6	(semichroma)
(Reduced)	
.183: G10	(atonal-tonal)
.020: G9	(atonal-tonal)
.019: G6	(semichroma)
.013: G1	(atonal)

Genus 10 represents an extreme within the broad Supragenus II/Supragenus III spectrum of association, with the 4-7 subset 3-4, and the triad 3-11, as progenitors. In this context, the 'cadential' function of the hexachord 6-33 is now seen as representative of a wider Supragenus III (4-7) incursion. The cadential 'resolution' is achieved in b. 517 in the chromatic accretion of pitches culminating in the successive twelve-tone sonorities that mark the climax of the work. The corresponding genera profile for this passage (Table 8.12) sees Genus 5, representing the opposite 'extreme' within Supragenus II (4-3), ascendant.[40] The juxtaposition of genera representing the opposite extremes of the distinction manifest most clearly in the primary tetrachords, is

[40] The extent of 'difference' between the genera at opposite ends of the Supragenus II/III continuum is expressed in the Difquo value, with Genus 5 and Genus 10 occupying thirty-second place on the table of increasing difference between forty-three possible pairings (Forte 1988b, p. 223).

conducted principally in the harmonic domain, with the melodic profile of the passage from b. 517 outlining a predominantly stepwise climactic ascent, and forming sets with limited generic associations.[41]

Table 8.12 bb. 517-45

	G1	G5	G6	G10
3-1		o		
9-4				o
9-5	o			
4-3			o	
8-5	o			
8-6	o			
5-1		o		
5-4		o		
7-5		o		
5-12	o			
6-3		o		
Count:	4	5	1	1

Squo indices

(Full)

.157: G5	(chroma)
.101: G1	(atonal)
.081: G6	(semichroma)
.022: G10	(atonal-tonal)

(Reduced)

.157: G5	(chroma)
.058: G1	(atonal)
.022: G10	(semichroma)
.020: G6	(atonal-tonal)

The foregoing account of generic hegemony mirrors the fundamental shift of orientation experienced during the central Offertorium, as the fast music, characterised most immediately by Theme D, gradually yields to the slower, darker aspect of work's outer sections and (ultimately) the return of Theme A. It is this duality, manifest in harmonic terms in the 'pillar chords' 4-7 and 4-3, that underpins the formal 'dynamic' of work as a whole. The value of Forte's model of pitch-class set genera lies in its ability to demonstrate the full range of this duality, extending far beyond the pillar chords to embrace a network a generic affiliation in the domains of both harmony and melody. The idea of harmony as "architectural definition" is thus expanded into the melodic domain, embracing the "implications of the line" at a motivic level.

Briefly summarised, the 'progression' from the initial '4-7' realm to that of '4-3' was traced in three stages: 'stability' (Ex. 8.6); 'transition' (Ex. 8.7); 'consolidation'

[41] The accumulation of pitches taking place in the upper line forms the (in this context) Genus 10 nonad 9-4, with the ascent from E^4 outlining the octad 8-5 (a member of only Genus 1 and Genus 2). The pentachord 5-z12 formed by the ascending twelve-tone sonorities is similarly discriminating, being a member of only 3 genera (G1, G3 and G7).

(Ex. 8.8). This process was reflected in a concomitant shift in genera profiles from those dominated by the '4-7' Genus 8 (Tables 8.5 - 8.7) to that reflecting '4-3' Genus 6 hegemony (Table 8.10). While this stark juxtaposition represents the 'inner orbit' of the generic progression, closer scrutiny of the profiles revealed a wider, but no less distinct, duality between Supragenus II, associated with 4-7 (G8, G9 and G10), and Supragenus II (G5 and G6), associated with 4-3. This wider duality was encountered in the localised 'ABA' sectional form of Ex. 8.6 (Tables 8.5 - 8.7). The sense of continuum across the spectrum of genera provided by Forte's model enables the "constant autogenetic development of the materials" to be embraced and (more importantly) contextualised. The extremes represented by the outer regions of Supragenera II and III are explored still further as the work reaches its conclusion.

Postludium

The transition to the Postludium sees the generic polarity underpinning the central Offertorium detached from the points of focus around the pillar chords 4-7 and 4-3. In this specific sense, the Offertorium is self-contained, bounded by the framework of pillar sonorities shown in Ex. 8.5, while in the Postludium, return and closure rest largely upon the completion of the cycle of thematic repetition set in train in the Anteludium, with the return of Theme A at its original level of transposition (T0) in b. 575 (see Fig. 8.1). Equally significant is the return of the original Anteludium timpani figure [C#, F#, G] (set 3-5), anticipated in the C#s that emerge from the sustained twelve-tone cluster in bb. 552, and forming a link from the final 4-3 pillar, also grounded on C#. In both cases, however, the events of the Offertorium are heard to colour and even transform these elements, casting them in a new light, challenging the contextually defined, autonomous network of pitch-class set relations.

In addition to the various references to materials of the Offertorium that accompany the return of Theme A (culminating in the distinctive piccolo/xylophone 'motto', B^3), the most striking feature is its harmonic setting (Ex. 8.11). Triadic harmony (first encountered in the form of hexachordal polychords towards the conclusion of the Offertorium) now forms a chorale-like backdrop to the returning theme, with root position, major triads on trombones and tubas, suffusing the setting with a peculiar warmth. Concordance between theme and harmony is explicitly avoided, producing a succession of familiar 'triad plus added-note' sonorities, many of which have been encountered previously (most notably in the setting of the 'chorale' Theme C^4). In the Postludium, however, it is the explicit foregrounding of the triad that marks a significant departure, invoking a universal harmonic vocabulary that breaks the autonomous, symbiotic relationship between melody and harmony cultivated thus far.[42]

Schuman's description of the work's "freely composed" closing bars points to a further re-orientation, away from closely knit networks of related sets in favour of an intuitive summation of the work's "emotional climate". The principal elements of this summation are outlined in the form of a pitch reduction (Ex. 8.12). Clearly defined instrumental strata are again to the fore, with the Coda announced by a trumpet chord forming the familiar 'timpani' set 3-5 [Bb, B, E]. A shift of harmonic orientation is immediately effected, however, by the 'resolution' (Bb - A) to the diatonic 'fifths-cycle' sonority 3-9 [A, B, E], and reinforced by further diatonic sonorities, combining with the timpani figure to form the extended collection 9-9. This dramatic cadential gesture is succeeded by the subdued string sonorities that will lead to the work's "concluding outburst". Here too contextually defined sonorities are cast off as the generic tension inherent in the earlier 4-7/4-3 polarity is defused in favour predominantly whole-tone formations. From b. 603 three distinct strata partition the (almost) total chromatic.

[42] The sense of fracture between this setting and the established sonus of the work as a whole brings to mind the chorale setting at the conclusion of Berg's Violin Concerto.

Complementary whole-tone formations in upper [B#, A#, G#, F#, E, D], and lower [Db, Eb, F] strings unfold over a timpani ostinato, with chromatic completion achieved via B natural (violin 2, b. 606) and A natural (woodwind, b. 614). The timpani stratum reformulates the original Anteludium pattern, alluding, in the most ambiguous terms, to a cadential progression in either B major ('II' - 'V'), or F# major ('V' - 'I'). Such tonal allusion, while characteristic of Schuman's earlier work, is entirely remote from previous modes of harmonic organisation in the present context, an intuitive response to the work's wider, extra-musical, sub-text perhaps (see below).

Postscript

In the Ninth Symphony the essential characteristics of Schuman's unique musical voice are heard in their most highly developed form. The components of melody, harmony and form are heard to achieve their greatest synthesis in a work that personifies Schuman's "instinctive" approach to composition. The twin strands of the analysis presented here go some way towards charting that synthesis, tracing the autogenetic process behind a complex network of thematic association, and the formal dynamic, focussed about the pillar sonorities 4-7 and 4-3, seen to underpin the central span of the symphony. In the context of a complex and highly individual work such as this, however, analysis can, at best, trace only the guiding principles of thematic and harmonic association. To this end Forte's system of genera proved to be a valuable tool in tracing associations rooted in the intuitive process of autogenesis.

Ultimately, however, the Ninth Symphony cannot be constrained by theory. It is a response to human tragedy that demonstrates Schuman's composedly instinct at its most fervent. If there is a sense in which the concluding bars fail to 'resolve' all that has gone before, in the months following its completion (on March 27, 1968) further tragedies closer to home would provide the spur to revisit this musical territory. With its première dedicated to Martin Luther King and Robert Kennedy, both assassinated within weeks of the conclusion of the Ninth Symphony, Schuman's next work, *To Thee Old Cause* for solo oboe, brass and strings, is prefaced by lines of Walt Whitman that capture much of the fervour behind Schuman's most committed work:[43]

> To Thee Old cause!
> Thou peerless, passionate, good cause,
> Thou stern, remorseless, sweet idea,
> Deathless throughout the ages, races, lands,
> ...Thou seething principle!

Similarly sombre in tone, *To Thee Old Cause* may be regarded as a companion piece to the Ninth Symphony, with dense chordal sonorities providing a backdrop for an almost continuously evolving melodic line that begins much in the manner of the earlier work's Theme C [C, Db, Eb]. A further, intriguing parallel may to traced to the final bars, where a resolution of sorts is achieved, coming to rest on a sustained, root position triad of F# major; the sense of closure embracing a remarkable, and highly personal, period of creative activity.

[43] Preface to the published score (Merion Music Inc., 1971).

CONCLUDING OBSERVATIONS

"If a composer assumes a cloak that doesn't fit, he's in the fashion business, not the composing business. No real work of art ever failed because its vocabulary was out of vogue."[1]

The extensive and often highly detailed analyses presented here chart a particular aspect of William Schuman's career as a composer, namely his enduring fascination with the musical heritage of the symphony. In choosing to engage with the form, Schuman saw himself side-stepping the vagaries of fashion in order to follow his natural inclination, his instinct. Up to a point, then, Schuman was very much his own man, but he was also responding to the artistic climate of his time. Writing of Roy Harris's Third Symphony, Michael Steinberg (1999, p. 134-36) notes that,

> [i]t came along [...] at a point when audiences in this country were ready to welcome a strong and unmistakably American symphony. Not long after, two more Thirds, both even more emphatic than Harris's, hit home with equal force - one by Harris's student William Schuman in 1941, the other by Aaron Copland in 1946. The issue of an "unmistakably American symphony" and of a specifically American symphonic style seems a bit naive and irrelevant today; in the twenties and thirties it was a burning question.

The neoclassical orientation of these works fulfilled a need for accessible, communicative works, but for Schuman, perhaps more than for his compatriots, the archetypal models of the style proved, in the long term, to be antithetical to the symphonic ideal.

It is this aspect of Schuman's development as a composer that has formed a central thread through this dissertation., Schuman has been seen, over the course of a

[1] William Schuman, cited in Gleason and Becker, (1980).

thirty year period, to progressively break free from the essentially static, "architectural" forms of the Third Symphony, to pursue a highly individual interpretation of symphonic form, drawing on, and radically enhancing techniques of development and harmonic definition encountered in his early studies with Roy Harris.

The transition from the block-like forms of the Third Symphony to what might almost be described as a developmental "stream of consciousness" in the Ninth Symphony is a fascinating one, observed most clearly in the Sixth Symphony. Here the tension between stasis and development, manifest in the process of autogenesis played out over the formal 'props' of the passacaglia, ground bass and cantus firmus, is palpable. Within the confines of a single span, the harmonic duality approaches the ideal of a symphonic dialectic - of a Schoenbergian unity in diversity - but a true synthesis, or resolution of the diverse strands of discourse (harmonic, thematic, rhythmic, timbral ...) remains elusive. A greater synthesis is achieved (most notably between the domains of melody and harmony) in the Ninth Symphony. Here the process of autogenesis is pervasive, creating an almost constant flux of thematic materials against the backdrop of another harmonic duality that is itself a product of that process. It is this work that perhaps comes closest to Schuman's description of the symphony as comprising "multiple characters, complexity of theme, subsidiary ideas, main ideas, developmental devices" that "all [come] out as a unified whole in some way".

The deployment of genera theory in the analysis of these works has served to highlight and provide tangible evidence in support of these observations. Indeed, it must be argued that these observations only gain credence in the light of the detailed examination of the musical materials that enabled the instinctive course of Schuman's compositional process to be apprehended. Such apprehension, surely, is the *raison d'être* of analysis. That said, genera theory has the potential to be used as a rather blunt instrument. Genera analysis is, above all, a heuristic process, as demonstrated in this study, and elsewhere, contributing not simply to a clearer understanding of the internal dynamics of a work, but also affording insight (opening windows) beyond the formal autonomy upon which such theories appear to be predicated. Only on the basis of an intimate acquaintance with both musical materials and potential models can defensible assertions be made. In this respect genera theory is no different to any other process of analysis. As in the case of, for example, Schenkerian theory, genera analyses must be predicated on the basis of established principles. In the case of genera theory these must include transparent criteria for segmentation, the credible handling of statistical data, and, perhaps more contentiously, an acknowledgement of role of saliency in the interpretation of the results.

These principles apply equally to the contrasting theories of Richard Parks and Allen Forte explored here, both of which were shown to make a significant contribution to the further understanding of Schuman's music. Suggestions regarding the suitability of one or other of these approaches to different repertoires were confirmed to some extent. The Parksian Genus 8-23/8-22 was shown to provide an effective and informative model for Schuman's Third Symphony, demonstrating the centrality of certain prominent sonorities to the intervallic 'sonus' of the genus, in addition to providing a more inclusive model of the musical texture as a whole. This approach also proved valuable in the case of the 'transitional' Sixth Symphony, most notably in the highlighting the apparent 'mismatch' between prominent sonorities in the music and the theoretically based characteristic sets of the genus. The resulting compromise pointed to a tension between Schuman's desire to explore new vocabularies, giving freer rein to the process of autogenesis, and his continuing debt to the essentially diatonic orientation of his earlier stylistic milieu. Conversely, the genera model of Forte provided rather disparate profiles for music based around extended diatonic collections, but it proved to be particularly effective in tracing the harmonic duality at the heart of the Ninth Symphony, a work inhabiting a significantly more twelve-tone universe.

Perhaps more significant than a distinction based simply on sonic vocabulary, however, are the distinctions drawn with respect to that way in which the musical materials interact in these works. 'Bespoke' (Parksian) genera proved to be particularly effective in modelling discrete juxtapositions of harmonic materials, defined either as diatonic collections (Symphony No. 3) or opposing 'diatonic'/'chromatic' blocks (Symphony No. 6). However, such models proved to be virtually impossible to construct in the case of a work where the materials were subject to an almost constant developmental flux (Symphony No. 9). In these circumstances a predetermined (Fortean) matrix of generic association based upon trichordal progenitors enabled the developmental ebb and flow of the musical discourse to be traced, identifying a central harmonic duality, but also mapping the wider spectrum of sonorities engendered by the process of autogenesis.

In both cases the power of genera theory when applied to large-scale works such as these proved to be its ability to model shades of association far beyond simple networks of inclusion and non-inclusion. These shades of meaning accrue from close engagement with both model and object that is both laborious and rewarding in (approximately) equal measure.

APPENDIX A

EXCURSUS: THEORETICAL ISSUES RELATING TO THE INTERPRETATION OF GENERA MATRICES (CHAPTER 4)

The Fortean perspective

The further application of Rule 4 ("Rule of Singleton Extension") (from p. 121)

The decision to allocate the set 3-3 to Genus 6 by Rule 4, rather than engage a new Genus on its behalf by the application of Rule 3 would appear to be contrary to the second clause of Forte's Rule 4, whereby "Genera so engaged [by Singleton Extension] may incorporate other pitch-class sets *not yet situated in the matrix by Rules 1 or 3*. Rules 1 and 3 apply if more than one genus is a candidate" [emphasis added]. The difficulty here hinges upon the ambiguity in the phrase "not yet". If by this Forte implies that Rules 1 and 3 will always take precedence over Rule 4, then it is difficult to imagine any circumstances whereby a set might be allocated to a genus by Rule 4 (other than as its Singleton representative). The only logical interpretation, therefore is to assume that by "not yet" Forte is acknowledging the immutability of singleton engaged genera, allowing them to take precedence over genera engaged by Rule 3 (again, Rule 1 will always take precedence), thus ensuring the allocation of sets to the smallest number of genera. Meanwhile, the final clause clearly applies to the situation in which "more than one genus [invoked by singleton extension] is a candidate". The prioritisation of Rule 4 suggested here is already a feature of Rule 1 whereby "If more than one genus enjoys a particular Squo, Rule 1 associates the relevant pitch-class set with it (them) as well, unless there is a third candidate genus which has been invoked by Rule 4, the Rule of Singleton Extension, in which case the latter genus receives the pitch-class set."

From this position it is not difficult to envision situations where Rule 2 may be extended to omit "genera which are proper subsets of other genera with higher Squos [*or genera invoked by Singleton extension*]".[1]

That the "Rules for Interpretation" may themselves be subject to interpretation in certain circumstances is a point acknowledged by Forte in the context of his analysis of Stravinsky's *Symphony of Psalms* (1988b, p. 252). Here, "the Rules of Interpretation, strictly construed, place such familiar octatonic formations as 6-z13, the first hexachord of the ordered octatonic scale, in Genus 7 [chroma-dia], rather than Genus 3 [diminished]". In admitting the possibility of "dual membership for 6-z13 in both Genus 7 and Genus 3" due to the similar Squo values of the two genera, Forte concedes that "[t]here is evidently room for flexible interpretation of the genera matrices", adding that "it seems useful to remind the reader that the abstract interpretations presented in the generic matrices are subject to qualification and refinement depending upon analysis of the foreground which they purport to represent."[2]

Statistical checks and balances (percentage of potential) (from p. 135)

In highlighting the maximum Squos achievable in extremely large matrices (see Fig. 4.2), Kennett also alludes to the opposite statistical imbalance. In large matrices

[1] In one particular case, Kennett (1995, p. 286) proposes a similar subtle shift of emphasis in relation to the Singleton Extension rule. All the sets originally assigned to the genus with the highest Squo are reassigned to genera invoked by singleton extension in a case where all the sets are thus accounted for and the highest ranked genus did not contain a singleton.

[2] Unfortunately the reasoning behind Forte's interpretation is not always apparent, as in the case of his subsequent application of the Rules of Interpretation to specimen matrices (Forte's Tables 28 and 29, pp. 236-37). Again the anomaly lies in the interpretation of the Rule of Singleton Extension. Referring to Forte's Table 28, the set 5-6 embraces genera G1, G2 and G8. It is assigned to G1 by Singleton Extension in spite of the higher Squo exhibited by G8 (Rule 3). Both G1 and G2 are invoked by Singleton Extension, but G1 takes precedence by virtue of the further application of Rule 1 (it has a higher Squo than G2). The pentad 5-z38, meanwhile, embraces genera G1, G2, G3, G8, G9, G10, and G12. On this occasion, however, it is assigned to G8 by virtue of Rule 3 (Rule of Completion), not G1 as in the case of 5-6. The point of this observations is not to undermine Forte's presentation, but to draw attention to the subjective aspect of such decision processes. There is clearly room for interpretative decision making based upon the particular circumstances encountered. It is only through the further application of Forte's theory to 'real music' that this empirical aspect may be refined.

(with low maximum Squo) small genera are also denied the opportunity to realise their (high) maximum Squo. Thus, while a matrix entertaining Genus 2 should ideally contain more than sixty-five sets in order that the genus may be fully realised, at the same time a matrix containing Genus 4 should contain no more than twenty-one sets, if the Squo ranking is to be taken at 'face value'.

Kennett demonstrates clearly the impact of matrix/genus size on Squo indices and the need to interpret them with these limitations in mind. But it is also important to acknowledge the possibility of an opposite imbalance resulting from potential of percentage statistics that promote the claims of large genera. This situation is most graphically illustrated when very large Parksian (set complex based) genera are considered (as in the second part of Chapter 4). When the maximum Squos of all such genera are significantly smaller than the matrix maximum Squo the claims of the largest genera are significantly enhanced. What may be lost in this situation, however, is the original function of the Squo index which is to compensate for the inability of small genera to fully engage large matrices, and to effectively penalise large genera that engage a matrix by sheer weight of numbers. Seen in this light, the Squo index is designed not as a measure of 'generative potential realised', but as a measure of correspondence between model (genus) and object (matrix), where genus members not engaged by the matrix are as significant as those that are so engaged.[3] It is this "Goldilocks" view of genus/model correspondence (not too large, not too small, not too hot, not too cold...) that is encapsulated in Richard Parks's "Rules of Interpretation", discussed further in Chapter 4. Of the two measures under consideration here (Squo and percentage of potential) it would appear that neither can be seen to provide the complete picture of the position of genus in a particular context. What is required, rather, is an

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[3] The potential for confusion between these two measures is implicit in Forte's initial presentation of the Squo index, where it is described as "an index of [the genus's] relative strength" (1988b, p. 232). An "index of correspondence" might be a more accurate description.

awareness of statistical imbalances at work 'behind the scenes' in the interpretation of genera matrices.

Squo indices and percentages of potential (from p. 136)

The following discussion centres upon the interpretation of the various statistical measures of generic 'hegemony' outlined in Chapter 4 and applied to Tables 4.2 - 4.7. For convenience the tabular summary of this information presented there is reproduced below.

Fig. 4.3 Squo indices and percentages of potential, Tables 4.2 - 4.7

Canon	(23 sets)	
Squo (Full)	Squo (Reduced)	% of Potential
G11: .135	G11: .135	G12: 39.2%
G12: .087	G10: .032	G11: 39.1%
G10: .074	G7/12: .029	G10: 30.3%
G7: .058	G6: .019	G7: 26.1%
G1: .041	G1: .013	G2: 26.0%
G2: .040	G2: .007	G1: 25.8%
G6: .029		G6: 13.1%

Variation 1	(24 sets)	
Squo (Full)	Squo (Reduced)	% of Potential
G11: .172	G11: .172	G12: 50.0%
G12: .111	G12: .028	G11: 49.9%
G10: .071	G2: .026	G2: 37.7%
G2: .058	G10: .020	G1: 33.3%
G1: .053	G1: .013	G10: 29.1%
G9: .041	G9: .010	G9: 16.8%

Variation 2	(30 sets)	
Squo (Full)	Squo (Reduced)	% of Potential
G11: .126	G11: .126	G12: 56.8%
G12: .126	G12: .052	G2: 53.2%
G9: .106	G9: .049	G9: 43.4%
G10: .098	G10: .016	G10: 40.2%
G2: .082	G2: .015	G11: 37.8%
G7: .081	G:7 .007	G7: 36.5%

Variation 3	(25 sets)	
Squo (Full)	Squo (Reduced)	% of Potential
G11: .138	G11: .138	G12: 40.1%
G12: .089	G10: .039	G11: 40.0%
G10: .088	G7: .036	G10: 36.1%
G7: .071	G12: .027	G1: 32.1%
G1: .051	G1: .013	G7: 32.0%
G2: .049	G2: .012	G2: 31.8%

Variation 4	(62 sets)	
Squo (Full)	Squo (Reduced)	% of Potential
G10: .114	G10: .114	G10: 70.8%
G11: .106	G11: .044	G11: 65.8%
G12: .104	G12: .029	G12: 64.6%
G9: .094	G9: .016	G9: 58.4%
G4: .092	G4: .015	G4: 57.1%
G2: .087	G2: .012	G2: 56.5%
G1: .084	G7: .007	G1: 52.8%
G7: .082	G8: .004	G7: 50.9%
G8: .079	G1: .003	G8: 49.1%

Passacaglia	(72 sets)	
Squo (Full)	Squo (Reduced)	% of Potential
G11: .110	G11: .110	G11: 79.1%
G10: .108	G10: .061	G10: 77.7%
G12: .108	G12: .031	G12: 77.7%
G9: .098	G9: .014	G9: 70.5%
G3: .093	G1/4: .013	G3: 66.9%
G1: .088	G7: .009	G1: 63.3%
G4: .086	G3: .006	G4: 61.9%
G2: .085	G2: .004	G2: 61.1%
G7: .083	G8: .003	G7: 59.7%
G8: .078	G6: .003	G8: 56.1%
G6: .068		G6: 48.9%

In the case of the large matrices (Variation 4 and the Passacaglia as a whole) the percentages of potential confirm the Squo indices. In these cases each Squo index is measured against the maximum possible Squo for matrices of sixty-two (.161) and seventy-two (.139) sets, respectively. In the Passacaglia matrix no genus has a theoretical maximum Squo of less than .139, and in the case of Variation 4, only Genera 1 (.159) and 2 (.154) are lower than the matrix maximum of .161. As a result the measures of both 'generative performance' (percentage of potential) and 'matrix/genus correspondence' (Squo) coincide. The situation in the smaller matrices is very different, however. Here high theoretical Squos for the matrices consistently result in the percentage of potential being calculated in terms of the theoretical maximum Squos for individual genera, showing a clear divergence between 'matrix/genus correspondence' (Squo) and 'generative performance' (percentage of potential) rankings. By virtue of its small size (and therefore high maximum Squo of .345) Genus 11 consistently emerges as the genus corresponding most closely with the matrix (not too large, not too small...), while Genus 12 (with its smaller maximum Squo of .222) emerges as the genus most fully realised in terms of its generative potential. What the percentage of potential may suggest (here and in the remaining small matrices) is that Genus 12 (dia-tonal) may merit greater consideration as a contributor to the generic profile than is indicated by the Squo indices alone. This is hardly surprising in view of the close relationship between Genus 11 and Genus 12 as they combine to form Supragenus IV. The percentage of potential serves to highlight this relationship, showing the two genera to be almost identically realised, in terms of potential, in the Canon and Variations 1 and 3. A more far reaching change is seen in the rankings for Variation 2 where Genus 11 achieves only 37.8% of its potential for a matrix of this size, as opposed to Genus 12 with 56.8%

and, remarkably, Genus 2 with 53.2%. An explanation for this is best sought in the original, unreduced matrix for Variation 2 (Table A.1).

Table A.1 Variation 2 (Full matrix)

	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12
3-2					o	o	x					
3-6		x										
3-7							o				x	o
3-9											x	
3-11									o	o		x
4-14										x		
4-15	o	x										
4-17									x			
4-18	o		o						x			
4-19				o				o	x	o		
4-20										x		
4-22											x	o
4-23											x	
4-26												x
4-27		o	o									x
4-29	o	x										
5-22	o		o	o				o	x	o		
5-24	o	o					o				x	o
5-26		o	o	o		o	o	o	o	o		x
5-29	o	o	o				o			o	x	o
5-31	o	o	o			o	o		o			x
5-32	o	o	o						o			x
5-35											x	o
6-(19)/44	o	o	o	o				o	x	o		
6-(24)/46	o	o	o			o	o	o	o	o	x	o
6-(25)/47	o	o	o				o			o	x	o
6-(28)/49	o	o	o			o			x			o
6-(29)/50	o	o	o				o		o			x
6-31	o	o	o	o		o	o	o	o	o	x	o
6-33	o	o	o				o			o	x	o
Count: (f)	15	16	14	5	1	6	11	6	13	12	11	17
Count: (r)	0	3	0	0	0	0	1	0	6	2	11	7

(All genus members are designated 'o' or 'x', with 'x' indicating those remaining after reduction, cf. Table 4.4)

Squo Indices:

(Full)		(Reduced)	
.126: G11	(dia)	.126: G11	(dia)
.126: G12	(dia-tonal)	.052: G12	(dia-tonal)
.106: G9	(atonal-tonal)	.049: G9	(atonal-tonal)
.098: G10	(atonal-tonal)	.016: G10	(atonal-tonal)
.082: G2	(whole-tone)	.015: G2	(whole-tone)
.081: G7	(chroma-dia)	.007: G7	(chroma-dia)

In this relatively small matrix (maximum Squo .333) Genus 2 achieves its high percentage of potential on the basis of its low maximum Squo (.154) in contrast to

Genus 11 which is compared in terms of the much higher matrix maximum.[4] While Genus 2 contains a further forty-nine sets that are not engaged by the matrix (pushing its Squo index down), it does embrace just over half (sixteen) of the matrix sets (hence its enhanced percentage of potential). By contrast, Genus 11 contains only eleven matrix sets (realising relatively little of its potential), but this is achieved with only a further eighteen sets outside the matrix (thereby achieving a closer overall correspondence with the matrix). While each interpretation of the relative significance of these genera is perfectly valid in its own terms, there are a number of indications that serve to tip the balance in favour of the Squo index. In the first instance it is noticeable that the second placed genus in the Squo rankings (Genus 12) is not adversely effected by the percentage of potential measure. Significantly smaller than Genus 2, it none the less manages to achieve the highest percentage of potential, consolidating its high Squo ranking, and retaining the focus on the diatonic end of the generic spectrum. That this emphasis is indeed appropriate is confirmed upon examination of the sets embraced by Genus 2 and shown in Table A.1. Genus 2 can be seen to engage the matrix predominantly through pentachordal and hexachordal members, members that are 'multivalent' (that is to say that they are members of more than one genus, a characteristic of many five- and six-note sets).[5] With one exception, all the cardinal five and six sets embraced by Genus 2 are also members of either Genus 11 or Genus 12. Indeed it comes close to nullification in the reduction process, owing its existence in the reduced matrix only to the singleton 3-6 and the tetrachords 4-z15 and 4-z29 (whose only other association is with the more lowly ranked Genus 1). The implication here is that while Genus 2 achieves a high percentage of potential, the Squo rankings (Full and Reduced) present a clearer account of the generic reality. The justification for this interpretation lies in the distribution of sets of all cardinalities across the matrix, not just

[4] The maximum Sqou for Genus 11 (.345) just exceeds that for the matrix (.333).

those of cardinal 5 and 6. Genus 2 may account for sets of cardinal 5 and 6 more efficiently than either Genus 11 or Genus 12, but as a reflection of the trichordal and tetrachordal content of the matrix it is very poor. While no single genus accounts for all small sets, their preponderant positioning towards the 'diatonic' end of the matrix strongly suggests a reading favouring Supragenus IV (Genera 11 and 12), with further coverage from Supragenus III (Genera 8, 9 and 10), to have the greatest validity. This interpretation is supported not only by the Squo rankings, but by the consistent readings seen in the matrices for the Canon, the other variations, and the Passacaglia as a whole. That Variation 2 is different is beyond doubt; its vertical orientation produces a greater number of five and six note sets, but their origins serve only to confirm the Supragenus III/IV reading. With the exception of 6-33 (a melodic formation) and 6-z44 (a vertical sonority, marking the onset of b. 80), all the hexachords result from the interaction of melody and the 5-32 chords (bb. 74-79), while (with the exception of 4-23, also melodic) all the tetrachords result from the combination of the parallel minor triad texture of the melody and the timpani pedal (bb. 80-86).[6] While 5-32 is indeed a member of Genus 2, the pervasive triad (3-11) is not. Both are, however, members of Genus 12, a congruence that would appear to confirm the source of these sonorities at the 'diatonic' end of the generic spectrum.

[5] The term is coined by Kennett (1995, p. 349).

A Parksian model

Isolation of potential cynosures (from p. 146)

The following discussion examines the various statistical claims of potential cynosures, based upon the data provided in Table 4.17 (reproduced below).

Table 4.17 Potential cynosural sets: Squo, % of potential and saliency rankings

Set	% of matrix	Set	Squo	Set	% of potential	Set	Saliency
3-11	87.1	3-11	.056	3-11	87.5	3-11	$C^{mv}\ 1^{mv}\ 2^{v}\ 3^{mv}\ 4^{vc}$
3-7	77.6	3-9	.050	3-7	77.8	3-9	$C^{mv}\ 1^{m}\ 2^{m}\ 2^{m}\ 4^{v}$
3-5	75.3	3-7	.049	3-5	75.0	3-6	$C^{v}\ 1^{v}\ 2^{m}\ 3^{m}\ 4^{v}$
						3-7	$C^{mv}\ 2^{m}\ 3^{m}\ 4^{v}$
						3-5	$C^{m}\ 1^{m}\ 3^{m}\ 4^{mv}$
4-27	60.3	4-26	.061	4-z29	61.2	4-22	$C^{v}\ 1^{mv}\ 2^{mv}\ 3^{mv}\ 4^{vc}$
4-z29	60.3	4-27	.056	4-27	60.2	4-14	$C^{v}\ 1^{v}\ 2^{v}\ 3^{mv}\ 4^{mvc}$
4-14	56.4	4-14	.053	4-14	57.0	4-26	$C^{mv}\ 1^{v}\ 2^{v}\ 3^{mv}\ 4^{v}$
						4-23	$C^{v}\ 1^{m}\ 2^{m}\ 3^{m}\ 4^{v}$
						4-z29	$1^{v}\ 2^{v}\ 3^{mv}\ 4^{vc}$
						4-27	$1^{v}\ 2^{v}\ 4^{vc}$
5-32	47.9	5-35	.085	5-35	60.7	5-35	$C^{m}\ 2^{m}\ 3^{m}\ 4^{vc}$
5-24	47.9	5-32	.071	5-32	50.7	5-24	$1^{c}\ 2^{m}\ 4^{v}$
5-25	47.9	5-34	.070	5-25	50.7	5-23	$C^{m}\ 3^{m}\ 4^{v}$
						5-32	$2^{v}\ 3^{v}$
						5-25	4^{vc}
						5-34	4^{c}
6-33	52.0	6-32	.105	6-32	78.9	6-33	$1^{v}\ 2^{m}\ 3^{m}\ 4^{vc}$
6-z47	52.0	6-33	.098	6-33	73.7	6-32	$1^{c}\ 4^{vc}$
6-31	50.7	6-z47	.090	6-z47	66.9	6-z47	$2^{v}\ 4^{m}$
						6-31	2^{v}
7-23	61.2	7-35	.107	7-35	90.7	7-35	$C^{c}\ 1^{c}\ 2^{mc}\ 3^{mc}\ 4^{mvc}$
7-29	60.0	7-34	.098	7-34	83.1	7-23	3^{m}
7-30	57.6	7-23	.094	7-23	79.7	7-29	4^{c}
						7-30	3^{c}
						7-34	1^{c}
8-22	81.3	8-23	.087	8-22	81.1	8-23	$C^{c}\ 1^{c}\ 2^{c}\ 3^{mc}\ 4^{c}$
8-27	81.3	8-22	.077	8-27	80.6	8-22	$1^{m}\ 3^{mc}\ 4^{mc}$
8-4	64.8	8-27	.075	8-23	79.1	8-27	C^{c}
						8-4	4^{c}
9-7	96.7	9-9	.068	9-7	98.4	9-9	$C^{c}\ 2^{c}\ 3^{mc}\ 4^{c}$
9-11	96.7	9-6	.063	9-11	96.8	9-6	4^{c}
9-9	87.0	9-11	.062	9-9	87.2	9-7	3^{c}
						9-11	4^{c}

[6] See Exs. 3.8 and 3.10.

Of the trichords presented here 3-11 stands out, heading each of the statistical measures and featuring in all sections of the movement. The diatonic trichord 3-7 also features strongly in terms of its coverage of the matrix and percentage of potential, but its presence through the movement (saliency) is less pervasive. The repositioning of 3-7 and the disappearance of 3-9 when viewed in terms of their realised percentage of potential serves to highlight the rather different nature of the statistical imbalance encountered when dealing with one of the very largest complexes (3-7, 158 sets),[7] measured in the context of a matrix of eighty-five sets.[8] None of the trichordal complexes involved has a theoretical maximum Squo greater than that for the matrix (.118).[9] As a result, the percentages of potential (calculated in terms of the theoretical maximum Squo for each complex) effectively undermine the Squo ranking, promoting the larger 3-7 complex (maximum Squo .063) ahead of the smaller 3-9 complex (with its relatively high maximum Squo of .078). As a measure of 'fit' in terms of Rules 1 and 3, the original Squo ranking provides the most balanced comparison here. On this basis the complex about 3-5 (158 sets), while engaging 75.3% of the matrix, fares poorly in the Squo rankings (fourth place). It is also less pervasive in its presentation, occurring only as a melodic formation with the exception of Variation 4. It does not feature at all in Variation 2.

The situation surrounding the tetrachords is still less focussed. Only the 4-23 complex enjoys a theoretical maximum Squo (.138) that exceeds that of the matrix (.128), but it fails to register significantly in either Squo (fifth place), or percentage of potential rankings (eighth place). The tetrachords that do head the Squo ranking fare poorly in terms of straightforward (Rule 1) coverage. No tetrachord embraces more than 60.3% of the matrix, this in spite of the elimination of all other tetrachords from the

[7] Viewed in these terms, 3-9 falls to eighth position among the trichords, only 3-10, 3-6 and 3-12 fare worse.
[8] Here too complexes are measured in the context of a matrix excluding sets of the 'cynosural' cardinality.

calculation. Furthermore, the only set to feature strongly in terms of both percentage of matrix and Squo (4-27) proves to be relatively insignificant in terms of saliency. The high percentage of potential achieved by 4-z29 (61.2%) reflects only its large complex size (117 sets), and in terms of saliency it is confined to the variations, where it appears predominantly as a vertical formation; its melodic profile is extremely low.[10]

The pentachordal profile offers no set complex covering more than 47.9% of the matrix and once again no single set features strongly across all measures. The familiar 5-32 occupies a relatively strong position in terms of percentage of matrix and Squo, and it is presented as an important sonority, forming the sustained string chords below the woodwind in Variation 2 and recurring in the same form a the end of Variation 3. It is conspicuously absent from the rest of the movement, however. The small size of the diatonic cycle 5-35 complex (forty-three sets) affords it the highest Squo, and significantly no larger complex exceeds it in terms of percentage of potential. It is also the most prominent pentachord in terms of presentation.

The importance of the diatonic cycle as a generative force is confirmed by the larger set-complexes. In spite of their relatively small size in relation to other complexes about sets of the same cardinality, diatonic cycle cynosures head the Squo rankings for cardinal 6, 7, 8 and 9. All the hexachordal complexes are smaller than the matrix allowing the percentage of potential (calculated in terms of the matrix maximum Squo) to simply confirm the Squo ranking. Once again the small size of the diatonic cycle 6-32 complex is a severe handicap in terms of matrix coverage, nor does this hexachord feature prominently in the music. On balance the strongest hexachordal candidate is the 'not-quite diatonic' set 6-33 (a product of the 'gapped' diatonic cycle), featuring in each of the four variations, perhaps most notably in the context of the 'cadence' figuration

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[9] Only that about 3-12 matches it (.118), followed by those about 3-9 and 3-6 (.078).

[10] This is not to privelidge melodic formations in terms of salience. In some circumstances a vertical sonority may achieve particular prominence (the 5-32 chords of Variation 2 being one notable case). In the case of 4-z29 however, it is more often the product of vertical coincidence.

towards the conclusion of Variation 1 (Ex. 3.6, b. 63). Overall, however, it seems unlikely that a hexachordal cynosure will provide a suitable genus.

Potential cynosures of cardinal 7 are few, as, with the notable exception of the diatonic collection 7-35, those exhibiting significant statistical potential prove to adopt low profiles at the musical surface. The position of 7-35, however, does much to reinforce the importance of the diatonic cycle as a characteristic central to any proposed genus. As with the hexachords, the small size of the cardinal seven complexes ensures that the percentage of potential measure merely confirms the Squo ranking. The pre-eminence of 7-35 is only undermined by its inability to engage more than 45.9% of the matrix.

Of the cardinal eight complex generators under consideration, only the extended collection 8-23 and 8-22 are prominent features of the music. The 8-23 complex achieves the highest Squo, a reflection of its close engagement with the music, but also of its small size (seventy-two sets). It engages only 62.6% of the matrix. Much better coverage is achieved by the complex 8-22 (81.3%), a fact borne out by its enhanced percentage of potential. That this is in turn a reflection of its larger complex size (105 sets), expresses neatly the balance between the demands of Rule 1 requiring maximum matrix engagement (8-22) and those of Rule 3 imposing restraint on genus size (8-23).

The statistical skew invested in the percentage of potential measure when applied to particularly large complexes is most apparent in the case of the cardinal nine sets. The complexes about 9-7 and 9-11 achieve almost 100% of their potential in a matrix of ninety-two sets by virtue of their large size (158 and 156 sets, respectively) and, consequently, the very low 'complex maximum' Squos against which the percentage of potential is calculated. The same quality ensures almost blanket coverage of the matrix (96.7%). While the complex about 9-9 embraces only 87% of the matrix, it does so with greater economy (128 sets) as indicated by its leading Squo status and in accordance with Rule 3. It is also the only nine-note set to achieve prominence over the Passacaglia as a whole (although it is absent from Variation 1).

The balance between Park's Rule 1 ("Prefer those genera that contain as members as many as possible (ideally, all) of the scs represented in the musical object") and Rule 3 ("Prefer that genus which contains the smallest number of members") forms a crucial part of the interpretative process in generic analysis. Although Parks suggests the precedence of Rule 1 in his presentation there will inevitably be occasions when a perfect fit between model and object is not possible. As soon as this is the case the analyst is faced with a decision process that must take account not only of statistics, but that is of a qualitative nature also. Are there circumstances whereby a smaller genus, embracing less of the musical object as a whole, provides a better, which is to say more informative, model than a larger, more diffuse genus? Among the factors bearing upon this decision is the significance (salience) of those sets excluded from a more closely focussed generic model. Does, for example, the concept of unity (represented by a generically 'perfect' fit) feature more strongly in the aesthetic of certain works than others? With its roots in the motivic music of the early twentieth-century genera theory has an almost in-built proclivity for order. As an increasing range of 'musical objects' are subject to the scrutiny, the possibility that a lack of precise generic identity may also be analytically informative should not be dismissed.

"Characteristic sets": further theoretical issues (from p. 155)

The nature of the relationship between sets generated by the 'gapped' and 'ungapped' diatonic cycles is examined further by Daniel Harrison (1997, pp. 396-97) in his analysis of bi-tonal, pentatonic and diatonic elements in Milhaud's Chamber Symphony No. 2. Harrison adopts the rather more elegant term "First Derivative Series" to describe the ‘not-quite diatonic’ cycle of sets identified here. Coincidentally, in examining the relationship between the diatonic cycle (termed the 5-cycle by Harrison) and the related sets from the First Derivative Series, Harrison adopts a presentational format very similar to that used in comparing characteristic sets by Parks. Table A.2 adopts Harrison’s comparison of interval vectors, while also including successive interval arrays to further highlight the inherent similarities between the two groups of sets.

Table A.2 Characteristic sets for Genus 8-22/8-23 (after Harrison Figure 1)

sc	iv	sia	*sc*
9-7	$[67^{7}6_{7}3]$	1-1-1-1-1-2-1-2-2	
	$[6766\underline{8}3]$	1-1-1-2-1-1-1-2-2	9-9
8-22	$[465^{5}6_{6}2]$	1-1-1-2-1-2-2-2	
	$[4654\underline{7}2]$	1-1-1-2-2-1-2-2	8-23
7-23	$[^{3}5434_{5}1]$	2-1-1-1-2-2-3	
	$[2543\underline{6}1]$	1-2-2-1-2-2-2	7-35
6-33	$[14324_{4}{}^{1}]$	2-1-2-2-2-3	
	$[1432\underline{5}0]$	2-2-1-2-2-3	6-32
5-23	$[^{1}3213_{3}0]$	2-1-2-2-5	
	$[0321\underline{4}0]$	2-2-3-2-3	5-35
4-22	$[021^{1}2_{2}0]$	2-2-3-5	
	$[0210\underline{3}0]$	2-3-2-5	4-23
3-7	$[01^{1}0_{1}0]$	2-3-7	
	$[0100\underline{2}0]$	2-5-5	3-9

Harrison adopts two sets of typographical conventions. In relation to the “5-cyle” sets (right hand column):

1. Underlined digits in the interval-class (ic) 5 position in the vector highlight the generative role which that interval class plays in the formation of the series; a continual and integral increase in ic5 value is an obvious indication of the serial cycling of ic5s that created the series.
2. Boldfaced “1”s, which appear in various ic positions in the vector up to 7-35, denote ics that appear for the first time in the series. Each 5-cycling up to 7-35 brings about a hitherto unused ic.

While for the “First Derivative Series” (left-hand column):

1. The subscripted digit in the ic5 position in the interval vector shows that, compared to the 5-cycle set of the same cardinality, which appears immediately below, the set in question is down one ic5 value.
2. The superscripted digit appearing in various ic positions shows a new ic salient compared to the 5-cycle set of the same cardinality.

Harrison's mode of presentation highlights the position of the Genus 8-22 at one remove from the diatonic cycle. Each 'side' of the complex genus proposed in Chapter 4 is distinguished by a particular incremental pattern of expansion through the interval vectors, but there is also a distinctive pattern of expansion running through the combined sets of the complex genus. The only interval class not to increase in value reading from bottom to top is that of ic 5 and even here there is a pattern (two steps forward, one step back) that is certainly distinctive. The close bond between all the sets considered here is further reflected in the successive-interval arrays. Once again characteristic patterns reflect the two faces of the complex genus, but shared sequences are detectable even between sets of low cardinality; compare the successive interval arrays (sias) of 4-23 (2-3-2-5) and 4-22 (2-2-3-5) for example.

On this basis it would appear that all the sets listed in Table 4.25 are equally characteristic of the complex genus 8-22/8-23. As noted in Chapter 4, however, one characteristic that these sets do not share is that of symmetry. All the sets listed as characteristic of the 8-23 side of the complex genus are symmetrical, whereas all of those on the 8-22 side are non-symmetrical. Symptomatic of this difference is the increased opportunity for small non-symmetrical sets to form subsets of larger sets. Within the genus 8-22, for example, the most prolific members (subsets) are 3-7 (x9), 4-22 (x7), 5-23 (x5) and 6-33 (x3); those sets defined as characteristic by the intervallic properties noted above. In the case of the genus about the symmetrical cynosure 8-23, however, the most prolific are again non-symmetrical: 3-7 (x10), 4-22 (x8), 5-23 and 5-27, (both x6), and 6-z25 and 6-33 (both x4). This distribution of genus members could be taken as an indication of the greater generative power of the larger Genus 8-22; an interpretation supported by the fact that Genus 8-23 is almost a subset of Genus 8-22.[11] The value of such criteria in determining the characteristic sets of less clearly defined genera is explored further in Chapter 7 (pp. 256-64).

Further evidence of the priority to be afforded the generative diatonic cycle on both sides of the complex Genus 8-22/8-23 is provided in the application of Richard Cohn's (1988) operation of transpositional combination (TC), when applied to the characteristics sets of each side.[12] The sets of the diatonic cycle demonstrate a further isomorphic property as the application of the TC operation to characteristic sets generates further sets in the cycle, thus: 3-9 ∗ 3-9 = 5-35; 3-9 ∗ 4-23 = 6-32; 3-9 ∗ 5-35 = 7-35; 4-23 ∗ 4-23 = 7-35; 4-23 ∗ 5-35 = 8-23. The same operation applied to sets on the 8-22 side, however, generates sets that, while predominantly consistent with the sets that combine to generate them, also betray their allegiance to the diatonic cycle: 3-7 ∗ 3-7 = 6-33; 3-7 ∗ 4-22 = 7-23; 3-7 ∗ 5-23 = 9-9 (not 9-7); 4-22 ∗ 4-22 = 8-22; 4-22 ∗ 5-23 = 10-5 (the ten note extension of the diatonic cycle). Within the context of the proposed complex genus this may be seen as an indication of the diatonic properties underlying both sides of the genus.

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[11] The only genus 8-23 sets not contained in Genus 8-22 are: 3-10, 4-9, 5-7, 5-19, 6-z12, 6-18, 6-z38, 6-z50, 7-14, 7-29 and 8-23 itself.

[12] I am grateful to Richard Parks for this observation (personal correspondence, June 29, 1999). Cohn's TC operation sums "all pairs between the two prime forms" (1988, p. 28) to form a new set as follows: 3-9 (0,2,7) + 3-9 (0,2,7) = 5-35 (0,2,4,7,9).The calculation is expressed by Cohn in the form of a matrix, thus:

$$\begin{array}{c|ccc} 7 & 7 & 9 & 2 \\ 2 & 2 & 4 & 9 \\ 0 & 0 & 0 & 7 \\ \hline * & 0 & 2 & 7 \end{array}$$

Cohn expresses this operation 3-9 ∗ 3-9.

BIBLIOGRAPHY

References

Adams, K., G., 1998: *William Schuman: A Bio-Bibliography*, (Westport, Connecticut, Greenwood Press).

Agawu, K., 1988: review of Frisch, *Brahms and the Principle of Developing Variation*, *Music Analysis*, 7/1, pp. 99-105.

———1989: "Stravinsky's *Mass* and Stravinsky Analysis", *Music Theory Spectrum*, 11, pp. 139-63.

Antokoletz, E., 1984: *The Music of Bela Bartók: A Study of Tonality and Progression in Twentieth-Century Music*, (Berkeley, Los Angeles, University of California Press).

Ayrey, C., 1998a: "Berg's 'Warm die Lüfte' and PC Set Genera: A Preliminar Reading", *Music Analysis*, 17/2, pp. 163-76.

———1998b: "Round Table: Response and Discussion" (Cambridge University Music Analysis Conference 1997, response by Forte, discussion by Ayrey, Parks, Doerksen, Dunsby, Kennett, Gates, Russ), *Music Analysis*, 17/2, pp. 227-36.

Baker, J., Beach, D., and Bernard, J., eds., 1997: *Music Theory in Concept and Practice*, (Rochester, University of Rochester Press).

Belfry, J., M., 1991: "*Judith* and the Louisville Orchestra: The Rest of the Story", *College Music Symposium*, 31, pp. 36-48.

Berger, A., 1953: *Aaron Copland*, (New York, OUP).

Boss, J., 1992: "Schoenberg's Op. 22 Radio Talk and Developing Variation in Atonal Music", *Music Theory Spectrum*, 14, pp. 125-49.

Brand, J., and Hailey, C., eds., 1997: *Constructive Dissonance: Arnold Schoenberg and the transformation of 20th-century culture* (Berkley, Los Angeles and London, University of California Press).

Broder, N., 1945: "The Music of William Schuman", *Musical Quarterly* 31, pp. 17-28.

Burkholder, J., P., 1983: "Museum Pieces: The Historicist Mainstream in Music of the Last Hundred Years", *Journal of Musicology*, 2, pp. 115-34.

Butterworth, N., 1998: *The American Symphony*, (Aldershot, Ashgate Publishing Limited).

Carter, C., 1997: "Stravinsky's 'Special Sense': The Rhetorical Use of Tonality in The Rake's Progress", *Music Theory Spectrum*, 19/1, pp. 55-80.

Chase, G., 1987: *America's Music: From the Pilgrims to the Present*, Revised Third Edition, (Urbana and Chicago, University of Illinois Press).

Clark, J.W., 1982: "The One-Movement Symphony in America, 1937-1976: With Analyses of Works by Roy Harris, William Schuman, Vincent Persichetti and Peter Fricker", unpublished Ph.D. dissertation, University of California, Santa Barbara.

———1986: "William Schuman on His Symphonies: An Interview", *American Music*, (Fall), pp. 328-36. (Also in Clark, 1982, pp. 230-59).

Cohn, R., 1988: "Inversional Symmetry and transpositional Combination in Bartók", *Music Theory Spectrum*, 10, pp.19-42.

Cook, N., 1987: *A Guide to Music Analysis*, (London, J.M.Dent & Sons Ltd.).

———1990: *Music, Imagination, and Culture*, (Oxford, OUP).

———1998: *Music: A Very Short Introduction*, (Oxford, OUP).

———1999: "Analysing Performance, Performing Analysis", in Cook, N., and Everist, M., eds., 1999, pp. 239-61.

Cook, N., and Everist, M., eds., 1999: *Rethinking Music*, (Oxford, OUP).

Copland, A., 1938: "Scores and Records", *Modern Music*, 15/4 (May/June), pp. 244-46.

———1951: Review of String Quartet no.4 in "Current Chronicle", *The Musical Quarterly*, 37, pp. 394-96.

———1980: *Music and Imagination* (Cambridge, Mass., Harvard University Press).

Copland A., and Perlis V., 1984: *Copland 1900 Through 1942*, (London, Boston, Faber and Faber Limited).

Cowell, H., ed., 1933: *American Composers on American Music: A Symposium*, (Stanford University Press, Stanford University, California).

Cross, C., 1980: "Three Levels of 'Idea' in Schoenberg's Thought and Writings", *Current Musicology*, 30, pp. 24-36.

Cross, J., 1998: *The Stravinsky Legacy*, (Cambridge, Cambridge University Press).

Dahlhaus, C., 1980: *Between Romanticism and Modernism: Four Studies in the Music of the Later Nineteenth Century*, trans. Whittall, M., (Berkley, Los Angeles and London, University of California Press).

———1987: *Schoenberg and the New Music*, trans. Puffett, D. and Clayton, A., (Cambridge, Cambridge University Press).

Dickinson, P., 1960: "Education at the Juilliard School of Music" *Musical Times*, May, pp. 297-98.

———1985a: "William Schuman: An American Symphonist at 75", *Musical Times,* 12, pp. 457-58.

———1985b: "Snap and Brilliance", *The Listener*, 22 August, pp. 34-5.

Doerksen, J., F., 1998: "Set-Class Salience and Forte's Theory of Genera" *Music Analysis*, 17/2, pp. 195-205.

Druckman, J., 1980: "The view from here and the view from there", in Rouse (1980, p. viii).

Dufallo, R., 1989: *Trackings: Composers Speak with Richard Dufallo*, (New York, Oxford, OUP).

Dunsby, J., 1997: "Schoenberg and Present-Day Theory and Practice" in Brand and Hailey, eds., 1997.

———1998: "Fortenotes", *Music Analysis*, 17/2, pp. 177-81.

Dunsby, J., and Whittall, A., 1988: *Music Analysis in Theory and Practice*, (London, Faber Music).

Eagleton, T., 1996: *Literary Theory: An Introduction* (Second Edition), (Oxford, Blackwell Publishers).

Erskine, John, 1973: *My Life in Music*, (New York, Greenwood Press, reprint).

Evans, H., 1998: *The American Century* (London, Jonathan Cape).

Evett, R., 1946: "The Harmonic Idiom of Roy Harris", *Modern Music*, 23, pp. 100-07.

———1955: "How Right is Right?", *Score and I.M.A. Magazine*, 12 (June), pp. 33-37.

Fink, R., 1999: "Going Flat: Post-Hierarchical Music Theory and the Musical Surface" in Cook, N., and Everist, M., eds., 1999, pp. 102-37.

Forte, A., 1973: *The Structure of Atonal Music*, (New Haven and London, Yale University Press).

———1988b: "Pitch-Class Set Genera and the Origin of Modern Harmonic Species", *Journal of Music Theory,* 32/2, pp. 187-270.

———1991: "Debussy and the Octatonic", *Music Analysis*, 10/1-2, pp. 125-69.

———1992a: "The Diatonic looking-glass, or an Ivesian Metamorphosis",*The Musical Quarterly*, 76/3, pp. 355-82.

———1998a: "Round Table: Response and Discussion", *Music Analysis*, 17/2, pp. 227-36.

———1998b: "Afterword", *Music Analysis*, 17/2, pp. 241-44.

Frisch, W., 1984: *Brahms and the Principle of Developing Variation* (Berkley and Los Angeles, University of California Press).

Gamer, C., 1967: "Some Combinational Resources of Equal Tempered Systems", *Journal of Music Theory,* 11, pp. 32-59.

Gleason, H., and Becker, W., 1980: "William Schuman", *20th-century American Composers,* Music Literature Outlines, series iv (Bloomington, IN, revised 1981), p. 173.

Goldman, R., F., ed., 1953: *The Juilliard Report on Teaching the Literature and Materials of Music* (New York, Norton & Co.).

Haimo, E., 1987: "Problems of Hierarchy in Stravinsky's Octet" in Haimo and Johnson, eds., 1987.

———1990: *Schoenberg's Serial Odyssey The Evolution of His Twelve-Tone Method, 1914-1928,* (Oxford, New York, OUP).

Haimo, E., and Johnson P., eds., 1987: *Stravinsky Retrospectives,* (Lincoln, University of Nebraska Press).

Hall. D., 1985: "A Bio-discography of William Schuman", *Ovation* , 6/7 (August), pp. 8-14, and 6/8 (September), pp. 18-22.

Harris, R., 1939: "Perspective at Forty", *Magazine of Art,* 32/11, pp. 63-39, 667-71.

Harrison, D., 1997: "Bitonality, Pentatonicism, and Diatonicism in a Work by Milhaud". In Baker, J., Beach, D., and Bernard, J., eds., 1997, pp. 393-408.

Harrison, L., 1944: "First-Time Fashions, New York, Fall, 1944", *Modern Music,* 22/1, pp. 30-35.

Hasty, C., 1981: "Segmentation and Process in Post-Tonal Music" *Music Theory Spectrum,* 3, pp. 54-73.

Hatch, C., and Bernstein, D., eds., 1993: *Music Theory and the Exploration of the Past,* (Chicago, University of Chicago Press).

Hitchcock, H., W., 1980: "William Schuman - Musical All-American", *Keynote,* 4/6 (August), pp. 13-17.

———1988: *Music in the United States - A Historical Introduction,* Third Edition, (Englewood Cliffs, New Jersey).

Hitchcock, H., Wiley, and Sadie, S., eds., 1986: *The New Grove Dictionary of American Music,* (London, Macmillan Press Limited).

Hyde, M., 1996: "Neoclassic and Anachronistic Impulses in Twentieth Century Music", *Music Theory Spectrum,* 18/2, pp. 200-35.

Johnson, P., 1978: "Cross-collectional Techniques of Structure in Stravinsky's Centric Music" in Haimo and Johnson, eds., 1987, pp. 55-75.

Keats, S., 1974: "William Schuman", *Stereo Review*, 32/6 (June), pp. 68-77.

Kennett, C., 1995: "The Harmonic Species of Frank Bridge: An experimental assessment of the applicability of pitch-class generic theory to analysis of a corpus of works by a transitional composer", unpublished Ph.D. dissertation, University of Reading.

———1998a: "Segmentation and Focus in Set-Generic Analysis", *Music Analysis*, 17/2, pp. 127-59.

———1998b: "Take Me Out to the Analysis Conference: Sets, Stats, Sports and Competance", *Music Analysis*, 17/2, pp. 182-94.

Kerman, J., 1980: "How We Got into Analysis and How to Get Out", *Critical Inquiry*, 7, pp. 311-31.

Kolodin, I., 1999: "Symphony No. 6, William Schuman", in booklet accompanying *New York Philharmonic - An American Celebration*, Volume 1, (The Philharmonic Society of new York, Inc.), pp. 180-84.

Kramer, L., 1990: *Music as Cultural Practice, 1800-1900*, (Berkeley, Los Angeles, University of California Press).

———1995: *Classical Music and Postmodern Knowledge*, (Berkeley, Los Angeles, University of California Press).

La Rue, J., 1970: *Guidelines for Style Analysis*, (New York, W.W. Norton & Company, Inc.).

Leichtentritt, H., 1978: *Serge Koussevitsky, the Boston Symphony Orchestra and the New American Music*, (Cambridge, MA.).

Lessem, A., 1988: "Teaching Americans Music: Some Émigré Composer Viewpoints, ca. 1930-1955" *Journal of the Arnold Schoenberg Institute* 1/i, pp. 4-22.

———1997: "The Émigré Experience Schoenberg in America", in Brand, J., and Hailey, C., eds., 1997, pp. 58-68.

Lowinsky, E. 1990: *Tonality and Atonality in Sixteenth Century Music*, (New York, Da Capo Press, first published Berkley, California 1962).

Mark, C., 1985: "Contextually Transformed Tonality in Britten", *Music Analysis*, 4/3, pp. 265-87.

Maus, F., E., 1999: "Concepts of Musical Unity" in Cook, N., and Everist, M., eds., 1999, pp. 102-37.

McKinley, L., 1977: "Stylistic Developments in Selected Symphonies of William Schuman: a comparison of symphonies numbers three and nine", unpublished Ph.D. dissertation, New York University.

Mellers, W., 1987: *Music in a New Found Land: Themes and Developments in the History of American Music,* (London, Faber and Faber Limited).

Mendel, A., 1932: "A Change in Structure", *The Nation,* 6 January.

Mill, R., H., 1986: "Orchestral music" 1-3 (3 with Feder, S.) in Hitchcock and Sadie eds., 1986, pp. 425-36.

Morris, R., 1997: "K, Kh, and Beyond" in Baker, Beach, and Bernard, eds., 1997, pp. 275-306.

Morton, L., 1944: "American Symphonists in Los Angeles", *Modern Music,* 21/2, pp. 100-02

Nattiez, Jean-Jacques, 1982: "Varese's 'Density 21.5': A Study in Semiological Analysis", *Music Analysis* 1/3, pp. 243-340.

Neff, S., 1984: "Aspects of Grundgestalt in Schoenberg's First String Quartet Op.7" *Theory and Practice,* 9, pp. 7-56.

Neumeyer, D., 1986: *The Music of Paul Hindemith,* (New Haven, Yale University Press).

Paddison, M., 1996: *Adorno, Modernism and Mass Culture,* (London, Kahn & Averill).

Parks, R., 1989: *The Music of Claude Debussy,* (New Haven and London, Yale University Press).

———1998a: "Pitch-Class Set Genera: My Theory, Forte's Theory", *Music Analysis,* 17/2, pp. 206-26.

———1998b: "Afterword", *Music Analysis,* 17/2, pp. 237-40.

Persichetti, V., 1962: *Twentieth Century Harmony: Creative Aspects and Practice,* (London, Faber and Faber).

Pople, A., 1994: SetBrowser 1.2 for Apple® Macintosh™

Puffett, D., 1986: "The Fugue from Tippett's Second String Quartet", *Music Analysis,* 5/2-3, pp. 233-64.

———1994: "In Defense of Formalism", *Music Analysis,* 13/1, pp. 3-5.

Rahn, J., 1980: *Basic Atonal Theory,* (New York, Schirmer Books).

Ramey, P., 1980: "William Schuman at Seventy. A Talk with the Composer", *Ovation,* (September), pp. 17-21.

Rouse, C., 1980: *William Schuman: Documentary* (New York, G. Schirmer, Inc.).

———1985: "Schuman and his generation: Finding an American voice", *Symphony Magazine*, 36/5, pp. 6, 8, 74.

———Personal correspondence, November 23, 1997.

Ruwet, N., 1987: "Methods of Analysis in Musicology", *Music Analysis*, 6:1-2, pp. 11-36. (Appearing earlier as: "Methodes d'analyse en musicologie", *Revue belge de musicologie*, 20, 1966, pp. 65-90).

Saylor, B., 1986: "Schuman, William (Howard)" in Hitchcock and Sadie, eds., 1986, vol. III, pp.166-69.

Schmalfeldt, J., 1983: *Berg's Wozzeck: Harmonic Language and Dramatic Design*, (New Haven, Yale University Press).

Schnepel, J., 1995: "The Critical Pursuit of the Great American Symphony", unpublished Ph.D. dissertation, University of Indiana.

Schoenberg, A., 1967: *Fundamentals of Musical Composition*, ed. Strang, G., and Stein, L., (London, Faber and Faber).

———1972: "Analysis of the Four Orchestral Songs Op.22", (trans. Claudio Spies) in Boretz and Cone, eds., 1972, pp. 25-45. First published in *Perspectives of New Music*, 1965, 3/ii, pp. 1-21.

———1975: *Style and Idea*, ed. Stein, L., (London, Faber & Faber).

———1994: *"Coherence, Counterpoint, Instrumentation, Instruction in Form"*, translated Cross, C., and Neff, S., (Lincoln, Nebraska and London: University of Nebraska Press).

———1995: *The Musical Idea, and the Logic, Technique, and Art of its Presentation*, edited, translated, and with a commentary by Carpenter, P., and Neff, S., (New York, Columbia University Press).

Schreiber, F., and Persichetti, V., 1954: *William Schuman* (New York, G. Schirmer, Inc.)

Schuller, G., 1989: *The Swing Era: The Development of Jazz, 1930-1945*, (Oxford, OUP).

Schuman, W., 1979: "Roy Harris 1898-1979", *Proceedings of the American Academy of Arts and Letters*, 2nd series, Part 3, pp. 54-6.

Shapiro A., ed., 1985: *Music and Context: Essays for John M. Ward*, (Department of Music: Harvard University).

Slepian, D., 1947: "Polyphonic Forms and Devices in Modern American Music", *The Musical Quarterly*, 33, pp. 311-26.

Soloman, L., 1982: "The List of Chords, Their Properties & Use in Analysis", *Interface –Journal of New Music Research*, 2/2, pp. 61-107.

Stehman, D., 1973: "The Symphonies of Roy Harris: an Analytical survey of the linear materials and of related works", unpublished Ph.D. dissertation, University of Southern California.

———1984: *Roy Harris: an American Musical Pioneer* (Boston).

———1986:"Harris, Roy" in Hitchcock and Sadie, eds., 1986, pp. 331-36.

Stein, L., 1959: "The Passacaglia in the Twentieth Century", *Music and Letters*, 40, pp. 150-53.

Steinberg, M., 1999: "Third Symphony (In One Movement) Roy Harris", in booklet accompanying *New York Philharmonic - An American Celebration*, Volume 1, (The Philharmonic Society of new York, Inc.), pp. 134-41.

Straus, J., 1987a: "The Problem of Prolongation in Post-Tonal Music", *Journal of Music Theory*, 31/1, pp. 1-21.

———1987b: "Sonata Form in Stravinsky" in Haimo, E., and Johnson P., eds., 1987.

———1990: *Remaking the Past : Musical Modernism and the Influence of the Tonal Tradition*, (Cambridge, Mass., London, Harvard University Press).

Thomson, V., 1948a: *The Art of Judging Music*, (New York, Alfred A. Knopf).

———1948b: "Schuman's *Undertow*" in Thomson, 1948a, pp. 157-59.

Van den Toorn, P., 1995: *Music, Politics and the Academy*, (Berkeley and Los Angeles, University of California Press).

Waldbauer, I., 1985: "Interplay of Tonality and Nontonal Constructs in Three Pieces from the Mikrokosmos of Bartók", in Shapiro A., ed., 1985, pp. 418-40.

Whittall, A., 1986-87: "The Theorists Sense of History: Concepts of Contemporaneity in Composition and Analysis", *Proceedings of the Royal Musical Association*, 112/1, pp. 1-20.

———1990: *The Music of Britten and Tippett: Studies in Themes and Techniques*, (2nd edn, Cambridge, Cambridge University Press).

———1993: "Experience, Thought and Musicology", *The Musical Times*, June, pp. 318-20.

Wilson, P., 1984: "Concepts of Prolongation and Bartók's Opus 20", *Music Theory Spectrum*, 6, pp. 79-89.

Zuck, B., 1980: *History of Musical Americanism*, (UMI Research Press).

Selected sources referred to during the preparation of this thesis

Relating to Schuman

Anon., 1942: "Schuman, William (Howard)", *Current Biography*, pp. 746-48.

Bals, K., E., 1982: "The American Piano Concerto in the Mid-Twentieth Century", unpublished DMA dissertation, University of Kansas.

Bernstein, L., 1942: "Young American - William Schuman", *Modern Music*, 19, pp. 97-99.

Broder, N., 1950: Review of Concerto for Violin in "Current Chronicle", *The Musical Quarterly*, 36, pp. 279-82.

Brown, M.,R., 1989: "The Band Music of William Schuman: A Study of Form, Content and Style", unpublished EDD dissertation, University of Georgia.

1995: "The Band Music of William Schuman", *Journal of the Conductors Guild*, 16/2, pp. 85-90.

Copland, A., 1942-43: "From the '20's to the '40's and Beyond", *Modern Music*, 20, pp. 78-82.

Deimler, K., M., G., 1981: "Quartal Harmony: An Analysis of Twelve Piano Compositions by Twentieth Century Composers", unpublished Ph.D.dissertation, New York University.

Demakis, L., W., 1989: *Inventory to the Papers & Records of William Schuman 1910 -*, Music Division, The New York Public Library at Lincoln Centre (unpublished).

Edmunds, J., and Boelzner, G., 1959: *Some Twentieth Century American Composers - A Selective Bibliography*, (New York, New York Public Library).

Evett, R., 1965: Review of Trio *Amaryllis* in "Current Chronicle", *Musical Quarterly*, 51, pp. 406-09.

Eyer, R., F., 1944: "Meet the Composer: (4) William Schuman", *Musical America*, January 25, pp. 8, 25.

Feldman, M., A., 1977: "Program Notes: Concerto for Violin and Orchestra", *Showcase*, January 5-30, pp. 38-40.

———1979: "Program Notes: Symphony No. 10", *Showcase*, March 1-24, pp. 32-34.

Fleming, S., 1980: "William Schuman: Musician of the Month", *High Fidelity (Musical America Edition)*, (August), pp. 4-5, 40.

Frankenstein, A., 1944-45: "William Schuman", *Modern Music*, 22, pp. 23-29.

Freedman, G., 1976: "Interview: 'Schuman at the Bat'", *Music Journal,* (July), pp. 14-16, 51.

Goldman, R., F., 1951: Review of *Judith* in "Current Chronicle", *The Musical Quarterly,* 37, pp. 254-60.

———1963: Review of Symphony no. 8 in "Current Chronicle", *The Musical Quarterly,* 49, pp. 91-92.

Griffin, M., J., 1972: "Style and Dimension in the Choral Works of William Schuman", unpublished D.MUS.A. dissertation, University of Illinois at Urbana-Champaign.

Haskell, H., 1992: "Schuman, William (Howard)", in Sadie, ed., 1992, pp. 252-53.

Hoag, C., 1992: "In Quest of 'Silver Ladders' in the Americas", *Contemporary Music Forum,* 4, pp. 9-16.

Hymel, M.,J., 1988: "A Comparative Analysis of Three Works for Band by William Schuman", unpublished MMED dissertation , Lamar University - Beaumont.

Laney, M.,I., 1964: "Thematic Material and Development Technique in Selected Contemporary Compositions", unpublished Ph.D. dissertation, Indiana University.

Persichetti, V., 1952: Review of Symphony no.6 in "Current Chronicle", *Musical Quarterly,* April, pp. 298-301.

Pooler, F., et al 1973: "In Quest of Answers: An Interview with William Schuman", *The Choral Journal,* February, pp. 5-15.

Ramey, P., 1983: "Malign Neglect: Masterpiece Syndrome and the Composer's Plight", *Keynote,* (April), pp. 12-17.

———1984: Sleeve note: *American Hymn,* Nonesuch 79072.

Rhodes, S.,L., 1987: "A Comparative Analysis of the Band Compositions of William Schuman", unpublished DA dissertation, University of Northern Colorado.

Rosenfeld, P., 1939: "Current Chronicle: Copland-Harris-Schuman", *The Musical Quarterly,* 25, pp. 372-81.

Sanders, L., 1984: "An Interview with William Schuman", *Horizons '84,* pp. 8-9.

Steele, J.,E., 1988: "William Schuman's Literature and Materials Approach: A Historical Precedent for Comprehensive Musicianship", unpublished Ph.D. dissertation, University of Florida, (1988).

Stewart, L.,C., 1991: "Music Composed for Martha Graham: A discussion of musical and choreographic collaborations", unpublished DMA dissertation, Peabody Institute of the John Hopkins University.

Writings by Schuman (see also under Harris)

1938: "Unconventional Case History" *Modern Music* 15/4, pp. 222-27.

1953: "Introduction" in Goldman 1953.

1961: "The Compleat Musician: Vincent Perichetti and Twentieth Century Harmony" (review of Persichetti 1961), *The Musical Quarterly*, 47, pp. 379-85.

1970: "Introduction" in Hines 1970.

1974: "Why the Arts?", *NAHO*, Fall, pp. 14-15.

1974: "Needed: more arts in education", *Inside Education*, (November), pp. 12-13.

1977: "Introduction" in Reis, 1977.

1979: "Americanism in Music: A Composer's View" in McCue, 1979, pp. 15-25.

1980: "The Purpose of a Symphony Orchestra", *Symphony Magazine*, (August), pp. 11-17.

1982: "Foreword", in Oja, ed., 1982, p. vii.

Relating to Harris

Farwell, A., 1932: "Roy Harris" *The Musical Quarterly*, 28, pp. 18-32.

Slonimsky, N., 1947: "Roy Harris", *The Musical Quarterly*, 33, pp. 17-36.

Stehman, D., 1991: *Roy Harris: A Bio-Bibliography*, (Westport, Connecticut, Greenwood Press).

Theory and Analysis

Antokoletz, E., 1986: "Interval Cycles in Stravinsky's Early Ballet's", *Journal of the American Musicological Society*, 39/3, pp. 578-614.

Allen, J., S., 1983: "Tonal Allusion and Illusion: Debussy's Sonata for Flute, Viola and Harp", *Cahiers Debussy*, 7, pp. 38-48.

Auner, J., 1996: "In Schoenberg's Workshop: Aggregates and Referential Collections in Die Glückliche Hand", *Music Theory Spectrum*, 18/1, pp. 77-105.

Baker, J., M., 1990: "Voice Leading in Post-Tonal Music: Suggestions for Extending Schenker's Theory", *Music Analysis*, 9/2, pp. 177-200.

Beach, D., ed., 1983: *Aspects of Schenkerian Theory*, (New Haven, Yale University Press).

Benjamin, W., E., 1977: "Tonality without Fifths: Remarks on the First Movement of Stravinsky's Concerto for Piano and Wind Instruments", *In Theory Only*, 2/11-12, pp. 53-70 and 3/2, pp. 9-31.

Bent, I., with Drabkin, W., 1998: *Analysis*, (Basingstoke, Macmillan).

Berger, A., 1963: "Problems of Pitch Organization in Stravinsky", in *Perspectives of New* Music, 2, (Fall-Winter), pp. 11-42. (Also in Boretz and Cone, eds., 1968).

Boretz, B., and Cone, E., eds., 1968: *Perspectives on Schoenberg and Stravinsky*, (Princeton).

Boss, J., 1994: "Schoenberg on Ornamentation and Structural Levels", *Journal of Music Theory*, 38/2, pp. 187-216.

Browne, R., 1981: "Tonal Implications of the Diatonic Set", *In Theory Only*, 5, pp. 3-21.

Carpenter, P., 1983: "Grungestalt as Tonal Function", *Music Theory Spectrum*, 5, pp. 15-38.

Casella, A., 1924: "Tone Problems of Today", *The Musical Quarterly*, 10/2, pp. 159-71.

Child, P., 1993: "Voice-Leading Patterns and Interval Collections in Late Shostakovitch: Symphony no.15", *Music Analysis*, 12/1, pp. 71-88.

Chrisman, R., 1977: "Describing Structural Aspects of Pitch-Class Sets Using Successive-Interval Arrays", *Journal of Music Theory*, 21/1, pp. 1-28.

Clough, J., 1979: "Aspects of Diatonic Sets", *Journal of Music Theory*, 23/1, pp. 45-61.

Cone, E., 1962: "Stravinsky: The Progress of a Method", *Perspectives of New Music*, 1/1, pp. 18-26.

———1962: "The Uses of Convention: Stravinsky and His Models", *The Musical Quarterly*, 48, pp. 287-99.

———1987: "On Derivation: Syntax and Rhetoric" *Music Analysis*, 6/3, pp. 237-55.

Dahlhaus, C., 1975: "Some Models of Unity in Musical Form", *Journal of Music Theory*, 19/2, pp. 1-30.

Dale, C., 1993: *Tonality and Structure in Schoenberg's Second String Quartet Op.10*, (New York and London, Garland Publishing Company).

Dunsby, J., 1982: "A Hitchhiker's Guide to Semiotic Music Analysis", *Music Analysis*, 1/3, pp. 235-42.

———1983: "Music and Semiotics: The Nattiez Phase", *The Musical Quarterly*, 69, pp. 27-43.

———1993 (ed.): *Models of Musical Analysis - Early Twentieth Century Music*, (Oxford, Blackwell Ltd.).

Epstein, D., 1987: *Beyond Orpheus - Studies in Musical Structure*, (Oxford, OUP).

Fleisher, R., 1989: "Dualism in the Music of Arnold Schoenberg", *Journal of the Arnold Schoenberg Institute*, 12/1, pp. 22-42.

Forte, A., 1972: "Sets and Nonsets in Schoenberg's Atonal Music", *Perspectives of New Music*, 11/1, pp. 43-64.

———1973: "The Basic Interval Patterns", *Journal of Music Theory*, 17, pp. 234-73.

———1978: *The Harmonic Organisation of The Rite of Spring*, (New York, Yale University Press).

———1983: "Motivic design and Structural Levels in the First Movement of Brahm's String Quartet in C Minor", *The Musical Quarterly*, 69/4, pp. 471-502.

———1988a: "New Approaches to the Linear Analysis of Music", *Journal of the American Musicological Society*, xli/2, pp. 315-48.

———1992b: "Concepts of Linearity in Schoenberg's Atonal Music: A Study of the Opus 15 Song Cycle", *Journal of Music Theory*, 36/2, pp. 285-382.

Friedman, M., 1985: "A Methodology for the Discussion of Contour: Its Application to Schoenberg's Music", *Journal of Music Theory*, 29, pp. 223-48.

Frisch, W., 1982: "Brahms, Developing Variation and the Schoenberg Critical Tradition", *Nineteenth Century Music* 5/3, pp. 215-32.

Gilbert, S.,E., 1974: "An Introduction to Trichordal Analysis", *Journal of Music Theory*, 18, pp. 338-62.

Goehr, A., 1973-74: "The Theoretical Writings of Arnold Schoenberg", *Proceedings of the Royal Musical Association*, 100, pp. 85-96.

———1977: "Schoenberg's Gedanke Manuscript", *Journal of the Arnold Schoenberg Institute*, 2, pp. 4-19. (Also in Goehr 1998).

———1998: *Finding the Key: Selected Writings of Alexander Goehr*, ed. Puffett, D., (London and Boston, Faber and Faber).

Goehr, W., and Goehr, A., 1957: "Arnold Schoenberg's Development Towards the Twelve-Tone System", in Goehr 1998, pp. 102-23.

Haimo, E., 1996: "Atonality, Analysis, and the Intentional Fallacy", *Music Theory Spectrum*, 18/2, pp. 167-99.

———1997: "Developing Variation and Schoenberg's Serial Music", *Music Analysis*, 16/3, pp. 349-65.

Hanson, H., 1960: *Harmonic Materials of Modern Music*, (New York).

Hasty, C, 1984: "Phrase Formation in Post-Tonal Music", *Journal of Music Theory*, 28, pp. 167-90.

———1986: "On the Problem of Succession and Continuity in Twentieth Century Music", *Music Theory Spectrum*, 8, pp. 58-74.

———1987: "An Intervallic Definition of Set Class", *Journal of Music Theory*,31/2, pp. 183-204.

Kárpáti, J., 1982: "Tonal Divergences of Melody and Harmony: A Characteristic Device in Bartók's Musical Language", *Studia Musicalogica Academiae Scientiarum Hungaricae*, 24, pp. 373-80.

Katz, A., 1947: *Challenge to Musical Tradition: A New Concept of Tonality*, (London, Putnam & Co. Ltd.).

Lerdahl, F., 1989: "Atonal Prolongational Structure", *Contemporary Music Review*, 4, pp. 65-87.

Lewin, D., 1987: *Generalized Musical Intervals and Transformations*, (New Haven and London, Yale University Press).

———1993: *Musical Form and Transformation: Four Analytic Essays*, (New Haven and London, Yale University Press).

Lidov, D., 1977: "Nattiez's Semiotics of Music", *The Canadian Journal of Research in Semiotics*, 5/2, pp. 13-54.

Lord, C., 1981: "Intervallic Similarity Relations in Atonal Set Analysis", *Journal of Music Theory*, 25, pp. 91-111.

McNamee, A., 1985: "Bitonality, Mode and Interval in the Music of Karol Szymanowski", *Journal of Music Theory*, 29/1, pp. 61-84.

Milstein, S., 1992: *Arnold Schoenberg: notes, sets, forms*, (Cambridge, Cambridge University Press).

Moevs, R., 1971: "Mannerism and Stylistic Consistency in Stravinsky", *Perspectives of New Music*, 9/2, and 10/1, pp. 92-103.

Morgan, R., 1976: "Dissonant Prolongations: Theoretical and Compositional Precedents", *Journal of Music Theory*, 20/1, pp. 49-92.

Morris, R. 1980: "A similarity index for pitch-class sets", *Perspectives of New Music*, 18/2, pp. 445-60.

Nattiez, Jean-Jacques, 1990: *Music and Discourse, Towards a Semiology of Music*, trans. Abbate, C., (Princeton, N.J., Princeton University Press).

Neff, S., 1993: "Goethe and Schoenberg: Organicism and Analysis", in Hatch and Bernstein, eds., 1993, pp. 409-33.

Parks, R., 1980: "Pitch Organisation in Debussy: Unordered Sets in 'Brouillards'", *Music Theory Spectrum*, 2, pp. 119-34

———1985: "Tonal Analogues as Atonal Resources and Their Relation to Form in Debussy's Chromatic Etude", *Journal of Music Theory*, 29/1, pp. 33-60.

Perle, G., 1990: "Pitch-Class Set Analysis: An Evaluation", *The Journal of Musicology*, 8/2, pp. 151-72.

Pople, A., 1983: "Skryabin's Prelude, Op.67, No.1: Sets and Structure", *Music Analysis*,2/2, pp. 151-73.

———1989: *Skryabin and Stravinsky 1908-1914: Studies in Theory and Analysis*, (New York and London, Garland Publishing Inc.).

Regener, E., 1974: "On Allen Forte's Theory of Chords", *Perspectives of New Music*, 13/1, pp. 191-212.

Reti, R., 1958: *Tonality - Atonality - Pantonality: A Study of Some Trends in Twentieth Century Music*, (London, Rockliff).

Rufer, J., 1954: *Composition With Twelve Tones Related Only To One Another*, trans. Searle, H., (London, Rockliff).

———1962: *The Works of Arnold Schoenberg*, trans. Newlin, D., (London, Faber and Faber).

Salzer, F., 1962: *Structural Hearing: Tonal Coherence in Music*, (New York, Dover Publications Inc.).

Schoenberg, A., 1960: "The Orchestral Variations Op.31: A Radio Talk", *The Score*, 27, pp. 27-40.

Solie, R., 1980: "The Living Work: Organicism and Analysis", *Nineteenth Century Music*, 4/1, pp. 147-56.

Straus, J., 1982: "A Principle of Voice Leading in the Music of Stravinsky", *Music Theory Spectrum*, 4, pp. 106-24.

———1982: "Stravinsky's Tonal Axis", *Journal of Music Theory*, 26/2, pp. 261-90.

———1990: *Introduction to Post-Tonal Theory*, (Englewood Cliffs, NJ, Prentice-Hall).

———1997: "Voice leading in Atonal music" in Baker, Beach, and Bernard, eds., 1997, pp. 237-74.

Tarushkin, R., 1979: review of Forte (1978), *Current Musicology*, 28, pp. 114-29.

———1987: "Chez Petrouchka: Harmony and Tonality chez Stravinsky", *Nineteenth Century Music*, 10/3, pp. 265-86.

Van den Toorn, P., 1983: *The Music of Stravinsky*, (New Haven, Yale University Press).

Vauclain, C., 1981: "Bartok: Beyond Bi-modality", *The Music Review*, 42, pp. 243-51.

Whittall, A., 1975: "Tonality and the Whole-Tone Scale in the Music of Debussy", *The Music Review*, 36, pp. 261-71.

———1979-80: "The Study of Britten: Triadic Harmony and Tonal Structure", *Proceedings of the Royal Musical Association*, 106, pp. 27-41.

———1982: "Music Analysis as Human Science: Le Sacre du Printemps in Theory and Practice", *Music Analysis*, 1/1, pp. 33-53.

General

Ballantine, C., 1983: *Twentieth Century Symphony*, (Durham, Dobson Books Ltd.).

Burkholder, J., P., 1984: "Brahms and Twentieth-Century Classical Music", *Nineteenth Century Music*, 8/1, pp. 75-83.

Chazin-Bennahum, J., 1994: *The Ballets of Anthony Tudor - Studies in Psyche and Satire*, (New York, OUP).

Clarke, G., E., 1977: *Essays on American Music*, (Westport, Connecticut, Greenwood Press).

Copland A., and Perlis V., 1992: *Copland Since 1943*, (London, New York, Marion Boyars Publishers Ltd.).

Gardner, M., ed., 1995: *The Annotated Casey at the Bat*, (New York, Dover Publications, Inc.).

Gay, H., 1974: *The Juilliard String Quartet*, (New York, Vantage Press).

Hines, R., S., 1970: *The Orchestral Composers Point of View: Essays on Twentieth-Century Music by Those Who Wrote It*, (Norman, Oklahoma, University of Oklahoma Press).

Lang., P., H., 1985: *One Hundred Years of Music in America*, (New York, Da Capo Press).

Levy, A., 1983: *Musical Nationalism: American Composer' Search for Indentity*, (Westport, Connecticut, Greenwood Press).

McCleary, T., 1986: "The Publication History of Style and Idea", *Journal of the Arnold Schoenberg Institute*, 9, pp. 181-209.

McCue, G., ed., 1979: *Music in American Society 1776-1976*, (New Brunswick, NJ).

Messing, S., 1988: *Neoclassicism in Music: From the Genesis of the Concept through the Schoenberg/Stravinsky Polemic*, (Ann Arbor, Mich., UMI Research press).

Morgan, R., 1991: *Twentieth-Century Music: A History of Musical Style in Modern Europe and America*, (New York and London).

Newlin, D., 1949: "Schoenberg in America", *Music Survey*, 1, pp. 129-31.

Oja, C., ed., 1982: *American Music Recordings: A Discography of 20th-Century U.S. Composers*, (Institute for Studies in American Music, Conservatory of Music, Brooklyn College of the City University of new York).

Preston, K., 1986: "Haubiel, Charles" in Hitchcock and Sadie (eds.), 1986, p. 345.

Read, G., 1979: *Style and Orchestration*, (New York, Schirmer Books).

Reis, C., 1974: *Composers, Conductors and Critics*, (Detroit, Detroit Reprints in Music).

———1977: *Composers in America*, (New York, Da Capo Press).

Rubasmen, W., 1951: "Schoenberg in America", *The Musical Quarterly*, 37/4, pp. 469-89.

Sessions, R., 1944: "Schoenberg in the United States", *Tempo*, 9, pp. 2-7.

Simms, B., 1986: *Music of the Twentieth Century*, (New York, Schirmer Books).

Stein, E., 1953: *Orpheus in New Guises*, (London, Rockliff).

Thomson, V., 1968: *The Musical Scene*, (New York, Greenwood Press).

———1969: *Music Right and Left*, (New York, Greenwood Press).

———1971: *American Music Since 1910*, (London, Weidenfeld and Nicolson).

Walsh, S., 1980: "Symphony, III. 20th century" in Sadie, 1980, pp. 462-96.

Published scores consulted

Schuman

Symphony No. 3, (New York, G. Schirmer, Inc.).

Symphony No. 4, (New York, G. Schirmer, Inc.).

Symphony No. 5, (New York, G. Schirmer, Inc.).

Symphony No. 6, (New York, G. Schirmer, Inc.).

Symphony No. 7, (Bryn Mawr, Pennsylvania, Merion Music, Inc.).

Symphony No. 8, (Bryn Mawr, Pennsylvania, Merion Music, Inc.).

Symphony No. 9, (Bryn Mawr, Pennsylvania, Merion Music, Inc.).

Symphony No. 10, (Bryn Mawr, Pennsylvania, Merion Music, Inc.).

String Quartet No. 2, (New York, Arrow Music Press, Inc.).

String Quartet No. 3, (Bryn Mawr, Pennsylvania, Theodore Presser Company).

String Quartet No. 4, (New York, G. Schirmer, Inc.).

String Quartet No. 5, (Bryn Mawr, Pennsylvania, Merion Music, Inc.).

Concerto for Violin and Orchestra, (Bryn Mawr, Pennsylvania, Merion Music, Inc.).

Four Canonic Choruses, (New York, G. Schirmer, Inc.).

American Festival Overture, (New York, G. Schirmer, Inc.).

Undertow (Choreographic Episodes for Orchetra), (New York, G. Schirmer, Inc.).

Night Journey (Choreographic Poem for Fifteen Instruments), (Bryn Mawr, Pennsylvania, Merion Music, Inc.).

Judith (Choreographic Poem for Orchestra), (New York, G. Schirmer, Inc.).

Voyage (A Cycle of Five Pieces for Piano), (Bryn Mawr, Pennsylvania, Merion Music, Inc.).

Credendum (Article of faith), (Bryn Mawr, Pennsylvania, Merion Music, Inc.).

New England Triptych (Three Pieces for Orchestra after William Billings), (Bryn Mawr, Pennsylvania, Merion Music, Inc.).

Carols of Death, (Bryn Mawr, Pennsylvania, Merion Music, Inc.).

A Song of Orpheus (Fantasy for Cello and Orchestra), (Bryn Mawr, Pennsylvania, Merion Music, Inc.).

"To Thee Old Cause" (Evocation for Oboe, Brass, Timpani, Piano and Strings), (Bryn Mawr, Pennsylvania, Merion Music, Inc.).

In Praise of Shahn (Canticle for Orchestra), (Bryn Mawr, Pennsylvania, Merion Music, Inc.).

Concerto on Old English Rounds, (Bryn Mawr, Pennsylvania, Merion Music, Inc.).

In Sweet Music (Serenade on a Setting of Shakespeare), (Bryn Mawr, Pennsylvania, Merion Music, Inc.).

Three Colloquies for French Horn and Orchestra, (Bryn Mawr, Pennsylvania, Merion Music, Inc.).

(For a comprehensive listing, see Adams (1998)).

Discography

Recordings consulted in the preparation of this thesis

Compact Disc

In Praise of Shahn, The Juilliard Orchestra, cond., Otto-Werner Mueller, New World Records NW 368-2.

Night Journey, The Atlantic Sinfonietta, cond., Andrew Schenck, Koch International Classics, 3-7051-2 H1.

"A Tribute to William Schuman": Variations on "America", *New England Triptych*, Symphony for Strings (No.5), *Judith*, Seattle Symphony, cond., Gerard Schwarz, DELOS DE 3115.

Symphony No. 7, Pittsburgh Symphony Orchestra, cond., Lorin Maazel, New World Records NW 348-2.

Symphony No. 10, American Festival Overture, Variations on "America", *New England Triptych*, Saint Louis Symphony Orchestra, cond., Leonard Slatkin, RCA Victor Red Seal 09026 61282 2.

Perceptions, Mail Order Madrigals, The Joyful Company of Singers, cond., Peter Broadbent, ASV CD DCA 939.

The Mighty Casey, A Question of Taste, Juilliard Opera Center, Juilliard Orchestra, cond., Gerard Schwarz, Delos DE 1030.

String Quartets Nos. 2, 3 and 5, Lydian String Quartet, harmonia mundi HMU 907114.

Carols of Death, Perceptions, Te Deum, Roberts Wesleyan College Chorale, cond., Robert Shewan, Bay Cities BCD 1022.

Voyage, Bennett Lerner, piano, ETCETERA KTC 1036.

In Praise of Shahn, To Thee Old Cause, New York Philharmonic Orchestra, cond., Leonard Bernstein, Sony Classical SMK 63088.

Symphonies Nos. 3, 5 and 8, New York Philharmonic Orchestra, cond., Leonard Bernstein, Sony Classical SMK 63163.

Violin Concerto, Paul Zukofsky vln, Boston Symphony Orchestra, cond., Michael Tilson Thomas, Deutsche Grammophon 429 860-2.

Symphony No. 6, New York Philharmonic Orchestra, cond., Leonard Bernstein, (radio broadcast, April 20, 1958) in "New York Philharmonic: An American Celebration", NYP 9904.

Vinyl LP

String Quartet No. 3, The Juilliard String Quartet, RCA Victor Red Seal LSC-2481.

String Quartet No. 3, The Kohon Quartet, American String Quartets vol. II, Vox SVBX 5305.

String Quartet No. 4, The Juilliard String Quartet, Columbia Masterworks ML 4493.

Judith - choreographic poem, *Undertow* - choreographic episodes, The Louisville Orchetra, cond., Robert Whitney (*Judith*) and William Schuman (*Undertow*), Mercury Classics MG 10088.

Judith - choreographic poem, *Night Journey* - choreographic poem, Eastmen Philharmonia, cond., David Effron (*Judith*), Endymion Ensemble, cond., Jon Goldberg, CRI SD 500.

Undertow [choreographic episodes], Ballet Theatre Orchetra, cond., Joseph Levine, New World Records NW 253 (previously on Capitol P-8238).

Voyage, Beverly Webster pn, Columbia Special Service Records CML 4987.

Three Score Set, Roger Shields pn, Piano Music in America vol.II, Vox SVBX 5303.

Symphony No.8, New York Philharmonic Orchestra, cond., Leonard Bernstein, Columbia Odyssey Y 34140.

Concerto for Piano and Orchestra, Gary Steigerwalt pn, M.I.T. Symphony Orchestra, cond., David Epstein, Turnabout TV 34733.

Symphony No. 9, The Philadelphia Orchestra, cond., Eugene Ormandy, RCA Red Seal LSC-3212 (also on CRI SD 477).

Concerto on Old English Rounds, Donald McInnes vla, New York Philharmonic Orchestra, cond., Leonard Bernstein, Columbia Masterworks M 35101.

George Washington Bridge, Eastman Symphonic Wind Ensemble, cond., Frederick Fennell, Mercury Classics MG 40006.

American Hymn, Saint Louis Symphony Orchestra, cond., Leonard Slatkin, Nonesuch 79072.

In Sweet Music, *The Young Dead Soldiers*, *Time to the Old*, Rosalind Rees sop, Thomas Muraco pn, Orpheus Trio, White Mountains Festival Orchestra, cond., Gerard Schwarz, CRI 439.

Symphony No.3, Symphony for Strings, New York Philharmonic Orchestra, cond., Leonard Bernstein, Columbia MS 7442 (reissued on Sony Classical SMK 63163).

To Thee Old Cause, Harold Gomberg ob, New York Philharmonic Orchestra, cond., Leonard Bernstein, Columbia MS 7392.

Symphony No. 6, The Philadelphia Orchestra, cond., Eugene Ormandy, Columbia Masterworks AML 4992 (also on CRI SD 477).

Credendum, The Philadelphia Orchestra, cond., Eugene Ormandy, Columbis Masterworks ML 5185.

A Song of Orpheus, Leonard Rose vc, The Cleveland Orchestra, cond., George Szell, Columbia Masterworks ML 6038.

Newsreel, Milwaukee Symphony Orchestra, cond., Lukas Foss, Pro-Arte Digital PAD 102.

Anniversary Fanfare, Brass and Percussion Ensemble, cond., Frederik Prausnitz, AKS 10001.

Orpheus with His Lute, Rosalind Rees sop, David Starobin gt, Turnabout TV 34727.

Variations on "America", Los Angeles Philharmonic Orchestra cond., Zubin Mehta, London CSA2246.

Prelude, America Sings The 20th Century Masters, cond., Greg Smith, Vox SVBX 5353.

Three Colloquies for Horn and Orchestra, New York Philharmonic, Philip Myerts hn, cond., Zubin Metha, New World Records, NW326.